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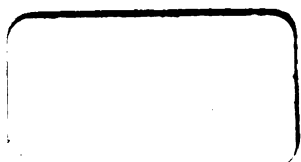
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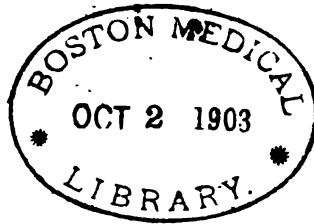
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1903

NEW YORK

AMERICAN GYNECOLOGY PUB. CO.

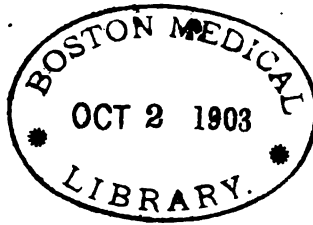
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AMERICAN GYNECOLOGY

VOL. II.

JANUARY, 1903.

No. 1.

REPORT OF A CASE OF CHORIOMA.*

By H. S. CROSSEN, M.D.,
St. Louis, Mo.

PATHOLOGIC REPORT.

By C. FISCH, M.D.,
St. Louis, Mo.

The patient, Mrs. B., was brought to me by her physician, Dr. J. D. Beatty, of Lincoln County, on account of repeated attacks of uterine hemorrhage. Dr. Beatty had been obliged to pack the vagina several times to check the bleeding. He suspected malignant disease.

The patient was a stout German woman, 48 years of age and the mother of eleven children. The last child was born four years before the present trouble began. It was a full term child but had been dead some time, and at birth was found macerated. Cause of death not known. The next to the last child was born eight years ago and was normal. The patient had had three miscarriages—two at about three months, more than eight years ago, and one at two months, six years ago. No trouble followed labors or miscarriages. General health good. The patient menstruated regularly and normally, the flow lasting two or three days, up to April, 1901. At that time she noticed that the menstruation was becoming irregular. The flow was of the same duration—two to three days—but it appeared only every six to eight weeks. Otherwise the patient's health was good. The last menstruation was in August, 1901. After this menstruation the patient began to feel badly. She had nausea, particularly in the mornings, and felt tired and weak. The stomach disturbance increased, there was frequent

* Read before the Medical Society of City Hospital Alumni, Oct. 16, 1902.

vomiting, and by October the patient was so weak that she was obliged to stay in bed. There was no particular pain, nor any vaginal discharge, bloody or otherwise.

In the latter part of October, some time after confinement to bed, the patient noticed a lump in the lower abdomen. This occupied the position of a pregnant uterus. In November, the fundus had risen to within two inches of the umbilicus—rather large for a pregnancy dating from the last menstruation (August). On account of the cessation of the menses, the enlarging abdomen and the stomach disturbance, the patient considered herself pregnant, although she was then 48 years of age. The breasts were not enlarged nor tender.

November 26 the patient was seized with pains resembling those of labor and after the pains had continued about twelve hours a tumor was passed *per vaginam*. It was the size of a fetal head and was jelly-like in consistency. It was made up of an innumerable number of small, rounded, semi-solid, translucent bodies, varying in size from a pin-head to the end of the thumb. These were small cysts and the mass was a vesicular mole, known also as hydatidiform mole. It half filled a large tin wash basin in which it was placed. In the basin, it flattened out as would be expected of a semi-solid body. There was not much bleeding during the expulsion of the mass. After this, the patient felt better and in ten days she was able to be up and about. She felt weak, however, and gained strength very slowly, and there was a persistent, blood-stained, watery discharge from the vagina.

January 5, six weeks after the tumor was passed, the patient had her first decided hemorrhage. It was quite severe, the patient stating that "blood ran away like water." After this, she had several hemorrhages at irregular intervals. The bleeding at such times was free, necessitating vaginal packing. There was a sanguino-purulent discharge nearly all the time. There was no pain except with the last hemorrhage, which occurred March 17. That was the most severe hemorrhage of all and was accompanied with considerable pain. The patient was brought to the city March 24, and I saw her then for the first time.

I curetted the uterus that night to stop the bleeding and secure specimens of tissue for microscopic examination.

The bimanual examination under anesthesia showed nothing pathological except a uterus about one half larger than normal. The enlargement was symmetrical and the uterus was freely movable. The cavity was about four inches in depth.

The curettings consisted principally of strips of mucosa. There

were two or three small, polypoid formations, hardly thicker than the strips of mucosa. In the left wall of the cavity, at the fundus, was a hard, irregular area projecting somewhat into the cavity. Particular care was exercised to secure tissue for examination from this region, but no thick pieces were obtained. Following the curettement a small piece of tissue for examination was excised from an irritated area on the cervix. The vagina appeared normal.

After curettement there was no further bleeding and the patient suffered no particular discomfort. The microscopic examination of the uterine scrapings showed malignant disease. The exact nature of the malignant disease was in doubt, but it was supposed to be sarcoma, as will be explained in the pathological report.

When the fact of malignancy was established, I, of course, advised immediate radical operation and a few days later performed a vaginal hysterectomy. The uterus was turned over to Dr. Fisch for further examination and I have asked him to present, in person, his findings in the case.

The patient recovered without incident and returned to her home. She has regained her former strength and weight, feels well, does her own housework and, so far, there is no evidence of recurrence.

PATHOLOGIC REPORT, WITH SOME GENERAL REMARKS ON CHORIOMA.

BY CARL FISCH, M.D.

My report upon the case of Dr. Crossen begins with the confession of a failure in diagnosis. The scanty amount of uterine scrapings submitted to me contained two or three small nodular pieces of tissue of a ragged appearance and of firm consistency, in addition to some small, very much torn shreds of mucosa. As far as could be made out from the material, the mucosa did not show any important changes. On microscopic examination, the firm nodules were found to be formed by myometrial tissue showing necrosis and fibrinous deposits at some parts of the periphery, presumably those looking toward the uterine cavity. The greater portion of this tissue seemed to be perfectly normal, but closer study revealed in it large cells of peculiar appearance, always single, but here and there lying more closely together; it was found, too, that in the places where these cells were seen, the surrounding muscle fibers appeared larger and more uniformly stained than in the portions free from those cells. In closely searching these parts, the

impression was gained that in them there was a gradual change from the normal muscle fibers to the enlarged ones, the latter assuming irregular shapes, their nuclei becoming more vesicular and larger, until at last I thought I could find all stages of fibers, from normal to the largest, and from them to the large cells mentioned. Conditions like these have been described by Pick and Williams as occurring in fibromyomas and I thought that I had to deal here with a sarcomatous change of the muscle fibers, and notified Dr. Crossen to that effect. The operation followed.

When I received the uterus, after removal, it was considerably larger than normal and of firm consistency. A longitudinal section through the anterior wall, made before I received it, showed the cavity somewhat enlarged and, protruding into it, a mass the size of a walnut, with rounded surface. It was situated at the upper portion of the fundus on the left side. Opposite to it, on the right side, was a smaller nodule



Fig. 1. Gross specimen.

with uneven, ragged surface, and a third one, still smaller, further down on the same side. These were not covered with mucosa, which otherwise appeared very thin, but was smooth and of a rose-red color. The cervical canal contained a few small polypoid growths, but was normal, as was the piece of vagina removed with the uterus, and also the tubes and the ovaries. The wall of the uterus was thicker than normal, very firm and exhibited here and there very small areas of whitish color and homogeneous appearance. A section through the large tumor showed it to be deeply imbedded in the uterine wall, nearly reaching the peritoneum (Fig. 1); it seemed to be formed by a thick shell of yellowish,



FIG. 2. Langhans cells at periphery of large tumor.



FIG. 3. From center of large tumor. Alveolar arrangement of Langhans cells in meshes of syncytium.



FIG. 4. Villus-like formation from center of large tumor.

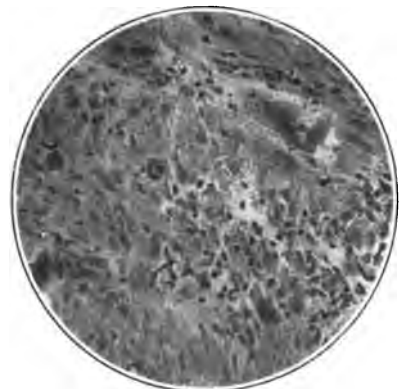


FIG. 5. Langhans cells in uterine wall.

homogenous material and in its center was a cavity filled with a deep-red, soft substance. The smaller tumors on section consisted of solid tissue surrounding large and small yellowish areas. While the larger node was quite sharply differentiated from the surrounding tissue, this was not the case with the smaller ones which gradually faded away in the myometrium.

Although the small nodules were first examined, I shall begin with a description of the microscopic findings in the large mass. Its main substance was found to be fibrinous material with inclusions of blood, single lymphocytes and fragments of nuclear structures. Here and there, at the portions near the periphery, larger cells resembling those found in the curettings were seen. In some places on the portion protruding into the uterine cavity these cells were agglomerated to a more or less thick layer (Fig. 2). Where the tumor was in contact with the uterine wall, the surrounding myometrial tissue was compressed into concentric layers of fibrous tissue, showing infiltration with lymphocytes. Stains for elastic fibers failed to show any in this zone; but beyond it, in the myometrium, the same appearances were found as in the curettings. The central cavity of the tumor surprised me. It was lined with a fantastic layer of cells, varying greatly in size and shape, but characterized by their deep-stained nuclei, the number of mitoses and the brownish-red staining protoplasm. Their arrangement was absolutely irregular and was made more irregular by spaces filled with blood (Fig. 9). From this layer bands and irregular processes projected into the cavity where they were accompanied and interwoven with typical syncytial formations with all their well-known characteristics (Fig. 3). Blood spaces without lining were intermixed, and the whole mass formed a chaos that was at once recognized as a chorio-epithelioma. The most interesting point was that here and there traces of mesodermic tissue appeared as a kind of stroma, and even formations were seen that, aside from the proliferation of the epithelial lining and the myxomatous changes in the stroma, very well represented villi (Fig. 4). For a certain reason, I remark here that the epithelial proliferation of these villi never extended into the villi. Apart from its abnormal proliferation, the syncytial masses had the ordinary structure, vacuolisation was very frequent and they, as well as the other tumor cells, contained granules and larger masses of glycogen. In a very characteristic way, too, the meshwork of syncytial bands, enclosing smaller masses of the other cells, was observed. These other cells, which now must be called Langhans cells, varied in size and shape from small cubical cells to the dimensions of giant cells. So-called syncytial giant cells,

of course, were present in large number. Any order or regularity in the arrangement of these different forms of cells could not be made out.

Having thus established the nature of the condition, the examination of the other tumors and the uterine body was only confirmatory. The small nodules mentioned were made up of myometrium with larger and smaller foci of coagulation necrosis and hemorrhages; where they gradually changed to the normal myometrium, the same observations were made as in the curetted particles. They represent small metastatic foci of the growth in which the cells, through fibrinous degeneration, have disappeared, but from which some cells have broken through into the lymph spaces of the healthy tissue and are found here, as the large cells above described. The latter do not remain inert. Their peculiar reaction consists in a swelling of the surrounding cells or muscle fibers, giving the pictures described of the scrapings. Nowhere in these smaller nodules, nor anywhere else, was there seen an agglomeration of cells and the formation of a tumor-tissue proper.

More instructive than these small nodules, however, was the examination of the uterus in a number of places where macroscopically nothing abnormal could be found. It was here that it was possible to follow and study the dissemination of the tumor cells and their action on the surrounding tissue elements. I found tumor elements all over the uterus, from the os externum to the top of the fundus. They were found even in the small cervical polypi mentioned. It is, however, especially in a prognostic way of looking at the case, a noteworthy fact that I could not succeed in demonstrating them beyond the middle muscular layer of the myometrium, while in the cervix they were limited to the stroma of the mucosa and the most superficial layer of the underlying stratum.

In every section made, some of these peculiar cells are found, either single and widely apart, or in small aggregations, in which, however, the cells are separated always by one or more tissue cells. I have nowhere seen a contiguity between these cells except in the large tumor, although it must be supposed that the necrotic patches in the smaller nodules corresponded to larger masses of necrosed tumor tissue. The cells appear single and lie in the lymph spaces between the fibrous elements and the muscle fibers. Their shape often resembles the cells found in the larger tumor, but more frequently it is adapted to the space afforded by the lymph-room. Their cytologic structure varies greatly; while sometimes the protoplasm is uniformly granular, at other times, distinct vacuolisation is visible. Glycogen is found in these cells in varying quantity; their protoplasm stains deeply. The nuclei are rich in chromatin and stain intensely. Though some are small and



FIG. 6. Giant cells of syncytium under uterine mucosa. Also, surface epithelium syncytial.



FIG. 7. Langhans cells with fibrin in small venous channel.



FIG. 8. Small mass of chorioma cells and fibrin in a vein.



FIG. 9. Periphery of chorioma tissue in center of large tumor.

dense (pycnotic), they usually are much larger than the nuclei of the tissue cells, and sometimes they reach enormous dimensions. I have not observed mitoses in these cells. They are almost uniformly uninuclear and seldom is a cell containing two nuclei seen; their size varies greatly and not rarely reaches the size of giant cells. I have not been able to see any resemblance to decidual cells as has so often been asserted. The dense protoplasm alone differentiates them sufficiently. They are altogether identical with the cells which, from the periphery of the larger tumor, can be seen to invade the myometrial tissue and which, in their turn, can be identified with the tumor cells. In other words, we have to deal here with cells of the Langhans layer, or in a broader way, with the fetal epithelium. The syncytial form of this epithelium I encountered only in a few places under and in the uterine and cervical mucosa in the form of multinuclear protoplasmic masses, round or of amoeboid form and lying singly or in small groups (Fig. 6).

The question, how these cells wander between the tissue cells, is answered by other pictures that are seen very frequently. Before describing them I must briefly mention the reaction that the Langhans cells produce on the tissue cells. The latter (especially the muscle fibers) in the immediate neighborhood of such a cell appear swollen, their protoplasm homogeneous, the nuclei enlarged but impaired in their staining quality; by gradual changes, a small hyaline area forms around the Langhans cells by a form of coagulation necrosis, in which small hemorrhages very often can be found. The cells destroy the tissue, seemingly by an enzymotic process. This obtains for the Langhans cells as well as for the syncytial masses.

Quite frequently in the myometrium such hyaline areas of somewhat larger size are found comparatively sharply outlined, sometimes showing at their periphery irregularly distributed Langhans cells, at others consisting simply of fibrin and hemorrhagic exudates. Away from these masses and irregularly distributed in the myometrium are found isolated Langhans cells. Staining for elastic fibers sometimes shows a ring of elastic tissue around these areas, indicating that we have to deal with a blood vessel thrombosed and destroyed by tumor masses which themselves have undergone degeneration, but not without previously infecting the surrounding tissue. Other places allow us to see the beginning of this process. In small venous channels one finds single Langhans cells sometimes surrounded with some fibrin, destroyed blood corpuscles and leucocytes. Elsewhere, small tumor masses are seen in veins, the cells attached to fibrinous and hemorrhagic material (Fig. 7).

As has long been known, the chorio-epitheliomas form metastases only in the blood vessels, which they reach and into which they enter by destruction of the vascular wall. In our case, this process can be plainly followed and observed. Through the growth of the tumor in the thrombosed channels the latter are immensely dilated, thus forming the metastatic nodules which may reach an enormous size. Of course hemorrhages must follow and so the tumors later are found imbedded in a mass of fibrin and globular detritus. Since the tumor has no blood vessels of its own, its disintegration is only a question of time. Its danger lies in the advance guards which, as described, migrate from the tumor into the lymph spaces causing here the same pernicious effects as the primary tumor by corroding vessels and forming new metastases.

A very interesting phenomenon was observed on the uterine mucosa in places where, under the surface epithelium, small metastatic masses were situated. Here the epithelial cells had lost their identity and formed a syncytium-like layer on the surface of the mucosa. The nuclei appeared denser than in the normal cells, but by their irregular arrangement showed the origin of the peculiar formation (Fig. 5). Such syncytial changes of the epithelial cells have been observed in a number of pathologic conditions, and, especially in regard to the origin of the fetal syncytium, they have played a great part in the discussions. Ludwig Fränkel has insisted on their occurrence in the uterus outside of changes of pregnancy, but I have not found any evidence that they have ever been observed together with the occurrence of a chorio-epithelioma.

From what has been said, it follows that Dr. Crossen's case proved to be a chorio-epithelioma with all of the characteristic features of this new formation. It partakes of the pictures of both the forms of it that were designated by Marchand as the typic and atypic forms; the first, peculiar for its metastatization and formation of larger and smaller secondary tumors; the latter, by a more diffuse growth in the uterine wall.

The fascinating interest that these tumors have commanded, since they became known, lies in different directions. First of all, it is their origin that, from the beginning, connected them with the phenomenon of pregnancy. They have, in all cases reported, followed sooner or later a pregnancy of which, in about 50 per cent, the parturition was normal, and in the other 50 per cent was pathologic in the form of a hydatid mole. The interpretation which was given to their histologic appearance has been one of the most discussed subjects of pathologic anatomy for the last twenty-five years, and even now no uniformity of

opinion has been reached. The unique phenomenon that fetal structures begin a malignant growth and exert a destructive action on the tissues of the maternal organism, seems even to-day so paradoxical that, to some observers, far-fetched suppositions seem more acceptable than what we must consider the truth. A great deal of the uncertainty in the conception of the histological nature of these tumors was due to the difficulties in establishing the origin of the syncytium of the human fetus. It was variously ascribed to the uterine epithelium, to the endothelium of the maternal blood vessels, even to a syncytial metaplasia of maternal connective tissue, and only a year ago a publication by Winkler asserted similar formations in animals. According to these varying opinions the tumors were called sarcomas, myosarcomas, endotheliomas and deciduomas. It would tire your patience historically to review the bitter fight that has been waged on this point. Marchand was the first who recognized their real nature and introduced the name of chorio-epithelioma, meaning thereby a tumor arising from the malignant proliferation of the fetal epithelium. His opinion found many contestants, mainly because, until very recently, the origin of the syncytial layer of the fetal chorion was not conclusively demonstrated. Since, in a classical manner, Hubert Peters has done this by the examination of a human fertilized egg a few days old, the last objection against Marchand's interpretation has fallen, and to-day no reasonable doubt about the nature of the tumors can be longer entertained. The chorio-epitheliomas are tumors which arise from the epithelium of the fetal villi, and their growth in the internal tissues is only, as it were, an exaggeration of the processes that we observe during pregnancy, and especially in that form of pregnancy which partakes of a pathologic character, *i.e.*, the tubal pregnancy. In the latter, the destructive action on the maternal tissues by the fetal epithelium has now been so conclusively demonstrated that the clinical complications of it (at the time of rupture, etc.) have found a logical and rational interpretation. Even the imbedding of the ovum in the uterine mucosa is not a passive one due to the reaction of the mucosa, but the ovum by the destruction of mucosal cells wanders into the depth of the mucosa and arranges its habitat.

The difference between the growth of a chorio-epithelioma and that of the normal chorion villi lies in the unlimited proliferation of the two layers of epithelium, of which the syncytium is simply a product of the Langhans layer, and in its increased tendency to penetrate into the maternal organism. The mesoderm does not take part in this proliferation and is never found in the metastatic tumors, although in the primary growth traces of it may be found. The tumor, therefore, has no blood

supply and, like the **villus epithelium**, is forced to live in blood and from blood. The **quality** that this epithelium normally possesses of destroying tissue by coagulation necrosis (opening of maternal blood vessels by villi, the fibrin layer of Nitabuch) gives it the possibility, in its malignant form, of reaching the blood vessels and so of spreading and forming metastases. A point of interest in this respect has been the observation that the normal syncytium is a very caducous tissue element so that in normal pregnancy, after the fifth or sixth month, very little of it is to be found. This fact has been mentioned and urged over and over again and the contradiction has been emphasized between this behavior and its proliferation in the chorio-epithelioma. It has occurred to me that this objection is unjustified because, even in the relatively normal conditions of tubal pregnancy, we do not see the muscle fibers of the tube destroyed by syncytium but by elements of the trophoblast, which means distinct cells of the Langhans type. I was surprised to find the same in this case, the advance guards of the tumor formation always consisting of single, definite cells, not of syncytial giant cells which were found only in a few places and in small numbers. The syncytium is a formation of the Langhans cells, perhaps a modification especially adapted to nutritive or other functions, and it is no wonder that, in the formation of chorioma metastases, the primary cells appear as fully individualized, perfect cells. From what I have gathered from the literature, the same observations have been made in a great number of cases. That when the Langhans cells have fought their way to a blood vessel they soon adapt their inherent qualities to the favorable surroundings and form plenty of syncytial bands and buds is not surprising, and, in fact, under these circumstances, the metastases show always the typical mixture of cells and syncytium. Even the very frequent alveolar arrangement of the Langhans cells in a stroma of syncytial bands warrants this interpretation (Fig. 3).

In regard to the etiology of chorio-epithelioma, it is as obscure as that of all other malignant tumors. It is remarkable that this new formation follows hydatid-mole-pregnancy as often as normal parturition. Since we know that hydatid moles can become malignant, it is pertinent to assume that their origin is to be sought for in some anomalies of the fetal villi. But, on the other hand, in half of the cases of chorioma, no anomalies whatsoever have been observed, and the general consensus of opinion to-day seems to be that the exciting stimulus must be given by some peculiar condition of the maternal tissues. However, here we are altogether in the clutch of hypotheses for which no positive basis can be found.

The clinical and pathologic appearance varies greatly. Usually the primary tumor is found in the uterus. Metastases occur most frequently in the vagina and later in the lungs, heart and brain, and often, too, in the abdominal organs. Sometimes the metastases are few in number, at others they are innumerable. Of the greatest interest are those cases in which the primary tumor does not arise in the uterus, but somewhere else, mostly in the vagina. Cases have been described where, upon discovery of the vaginal tumor, the radical operation being made, the uterus was found absolutely free from any lesions. It was suggested that here, nevertheless, a primary uterine growth had existed but had disappeared. But it is hardly possible that such a tumor should disappear so as to leave no traces of its existence. And, furthermore, we know of phenomena which occur, if not often, yet not rarely, and which sufficiently explain these primary extra-uterine tumors. As has been known for a long time, Langhans cells and syncytium are widely distributed through the maternal organism by the circulation. They are comparatively easily found in the myometrium of every pregnant uterus, in the lung and sometimes in the liver, etc. They form a very conspicuous feature of the otherwise scanty pathologic findings in eclampsia. Not only isolated cells are thus distributed over wide distances, but also villi and pieces of villi are carried along with the venous blood of the mother and lodge in different places. Veit, Gottschalk, Lubarsch and others have found intravenous villi at great distances from the intravillous space, and Pick has demonstrated the transportation of villi from benign hydatid moles. It seems, therefore, that in such cases where no primary tumor in the uterus exists, we might be justified in accusing such transported villi, or parts of villi, as the starting point of the chorio-epithelioma. In the same way, in established tumors, we see single Langhans cells leave the place of their origin, and penetrate into the tissue, entering into a suitable blood vessel and building up a secondary growth. Except for the differences in proliferative energy, all of these cells are identical with the epithelial cells of any normal chorion. Under normal conditions transposed cells and villi perish very soon, but, given the favorable conditions, we can imagine them to become malignant. The result must necessarily be the picture of chorioma (Fig. 8).

If, with few exceptions, Marchand's teaching of the origin of chorioma has been uniformly accepted to-day, it was reserved for the most recent times to bring in a circuitous way a proof of its correctness which, from every point of view, must appear unobjectionable. So far, chorio-epithelioma was naturally considered essentially a tumor of females.

We owe to Schlagenhauser a classical paper in which we find the description of a series of choriomata in males. Without entering into the details of this fascinating publication, I shall simply say that a number of tumors have been examined in which formations were found not to be mistaken for anything else but syncytial masses. Schlagenhauser had the good fortune to observe such a new formation, and while the other observers, for obvious reasons, only emphasized the very close resemblance of these cell masses to fetal epithelium, Schlagenhauser established their identity with the latter. These tumors are tumors of the testicle, so-called teratomas, meaning new formations containing elements of all the three germinal layers. In these are found masses which, if given to a pathologist without information, would be diagnosed as chorio-epitheliomas. They form metastases like the latter. Furthermore, these tumors now and then show that pathologic condition of villus growth which is called hydatid mole. A beautiful instance of this growth is described by McCallum (*Johns Hopkins Hosp. Rep.*) as an intravascular endothelioma.*

Here, then, in tumors of the testes we have typical chorion epitheliomas and hydatid moles, and from them this metastatization occurs in the same way as in the female choriomas after pregnancy. To this class, too, although in a female, belongs a tumor described by Lubarsch which was found replacing the right ovary of a girl 13 years old, a *virgo intacta* as was ascertained by examination. This tumor also contained typical masses of chorio-epitheliomatous tissue. I need not remark how often ovaries are the seats of teratomas.

According to our modern conceptions, so clearly exposed by Wilms, teratomas are embryomas, *i.e.*, tumors arising from tissues of the developing fetus which, during development, have been separated from the normal aggregation. That such segregations (not migrations in Cohnheim's sense) occur is not any longer a postulate, but has been directly demonstrated by a long series of observations. Dependent upon the time in which this segregation occurs, the formation of the tumors varies, the earliest ones comprising elements of the three mesoblastic layers. If, therefore, in an embryoma, or teratoma, chorionic tissue occurs, the origin of the tumor dates from a time in which embryonic material for the formation of the fetal envelopes was formed. This means that we either must assume that the time of segregation was that of the formation of the first divisions of the egg cell (and then we would hardly expect the presence of fetal envelopments), or that remnants of a second fertilized cell (polar body) at an early period became attached to the growing egg. In other words, that the embryomas

really mean inclusions. In these cases, then, the teratoma with chorio-epithelioma or hydatid mole, is not a mixed tumor, after Wilms, but a real embryoma.

If this is the explanation for chorion elements in embryomas, we perhaps will not fail to accept Schlagenhauser's suggestion that the female chorio-epitheliomas, too, are embryomas, tumors in which the segregation of embryonic material has taken place during pregnancy. Against their fetal origin again and again has been urged the seeming independence of the time of the appearance of the growth from the time of the last pregnancy, the tumor appearing sometimes two, four, or even eight years after the last pregnancy. We must believe that the main cause for the occurrence of these tumors is not the pregnancy itself, but the fact that during a pregnancy a segregation of embryonal material—either of a normal ovum or of an abortion—has taken place. This material need not be derived from the last pregnancy, but may lie dormant, just as the material forming the other teratomas may lie dormant, for a great number of years. I cannot enter into the many suggestive ideas that would follow such a consideration of our tumor. I can only say that all of the discussed points would find their complete elucidation by its acceptance.

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THE SURGICAL TREATMENT OF PANCREATIC CYSTS, WITH REPORT OF TWO CASES.*

BY A. MORGAN CARTLEDGE, M.D.,

Louisville, Ky.

Cysts of the pancreas, while rarely encountered, are still the most common pathologic condition of this deep-seated organ that we are called upon to treat surgically. There is little doubt but that the field of surgery as applied to the pancreas should be extended, and some of the more recent contributions to the subject, (notably that of Park), will attract the attention of surgeons to this almost unexplored region of the abdomen. Since Gussenbauer, in 1882, first operated successfully by incision and drainage for pancreatic cysts, there have been collected by Körte and others about 121 cases. Most operators have followed the practice of Gussenbauer, that is, incised the cyst, stitched it to the parietal peritoneum and drained. According to Böckel, the cases so treated number 115. "In ninety-nine of these the cyst was opened at the first sitting, with the result that ninety-two recovered and seven died. In sixteen cases the cyst was opened subsequently, after the formation of adhesions, with sixteen recoveries and no deaths." (Tilton.) Certainly this table speaks well for the treatment by incision and drainage. Böckel has also collected twenty-five cases where extirpation, either complete or partial, of the sac was practiced, with four deaths.

A comparison of the results shown by these statistics would seem to indicate that incision and drainage should be practiced as a routine procedure in pancreatic cysts. And yet, a closer study of the clinical forms which the cyst may present, together with a closer study into the convalescence of the drained subjects, may cause us to attempt extirpation of the sac more frequently and with better results. It is a well-known fact that these accumulations in and about the pancreas do not all pursue the same anatomic route in presenting toward the surface. This fact, I think, should have great weight in deciding for or against complete extirpation. Undoubtedly evolution most often takes place below the stomach and above the transverse colon, the cyst carrying before it the gastro-colic omentum. Cysts so presenting are best suited to ex-

* Read before the Southern Surgical and Gynecological Association, at Cincinnati, O., Nov. 11, 12 and 13, 1902.

tirpation; or, as I prefer to say, enucleation. Probably the next most frequent evolution of the cyst is above the stomach, or between the stomach and the liver. Such a cyst, if adherent at all, would present the gravest dangers in its enucleation.

Can the manner or direction of the growth be ascertained with sufficient accuracy as to enable us to select a method of procedure? I think so, in the vast majority of cases. Oftentimes the physical signs presented by the tumor will suggest this. The cyst which has evolved above the stomach is on a higher plane and much more fixed than that below. Cysts presenting below the stomach tend to displace the pancreas downward by traction and so induce a condition of ptosis of this and surrounding organs. So great was this tendency in one of my cases as to permit me, acting in conjunction with a deep inspiration upon the part of the patient, to carry the cyst almost to the pelvic brim. Finally the question may be definitely settled by a sufficiently long incision of the abdominal wall to permit of inspection. That extirpation is the ideal operation, did safety permit, few would dispute who have had experience with incision and drainage. The latter is slow and disagreeable to a tantalizing extent, both for patient and surgeon.

My experience with the treatment of pancreatic cyst is limited to two cases, one treated by incision and drainage and the other by enucleation of the cyst. Both recovered.

Of the first I shall speak very briefly. The patient was a maiden woman, aged 31 years. She had enjoyed usual health until some two years before I saw her. She presented symptoms of indigestion, discomfort about the left side—"around her heart," as she expressed it—loss of flesh and some anemia. There was a tumor in the upper left quadrant of the abdomen, extending as far as the median line, most prominent at or just below left costal arch. It was very tense and immovable. On making an explorative incision in the left semilunaris, beginning at costal border and four inches in length, a dark, shining cyst came at once into view. The incision was enlarged, the hand introduced and passed deeply above and back of the cyst. The cyst was partially emptied of its contents by a trocar, drawn out, and an incision made sufficiently long to pass my hand in and to the bottom of the cyst. I could plainly feel the pancreas through the thin cyst wall, the attached portion feeling as if there was interposed a granular deposit in its walls. It was now sutured to the parietal peritoneum and drained by two long rubber tubes reaching quite to the bottom. This patient displayed no operative symptoms of an unfavorable kind but I thought

the fistula would never heal; this finally occurred after several months of irritating discharge and she has remained well for ten years.

The second case is, I think, of great interest in view of the few complete extirpations that have been done, and I must say it leads me to believe we could practice this procedure oftener with advantage. I would lay particular emphasis upon the point that, in attempting complete removal, our idea should be enucleation with all that term conveys; *i.e.*, get to the cyst wall certainly, and stick to it surely with the only instrument capable of a perfect cyst enucleation—the finger. When traversing the omentum we must ligate carefully all bleeding vessels; after this is done, though many adhesions are encountered, if we keep our bearing to the cyst wall, few or no ligatures will be required until the pedicle (if there be one) or the special attachment to the pancreas is reached. The cyst here presented would be called a very adherent one, and yet no difficulty was encountered in its enucleation by the method I have indicated. It was of downward evolution, the stomach being above and the transverse colon immediately across below, thus presenting through the gastro-colic omentum. Its attachment to the pancreas scarcely deserved the name of a pedicle. The report from my records is as follows:

Woman, aged 45. Previous general health good. Is married; has six children; two dead; the oldest 17 and the youngest 6 years. About ten years ago she felt an enlargement in the left side, below the lower border of the ribs. The patient thought, at the time, that she was pregnant. About two or three months later she became pregnant. After the birth of the child she said she felt "as large as ever." The size of the tumor, as large as a small watermelon, had not increased during its course. She had one child after this, the presence of the tumor not interfering with pregnancy. About two months ago she noticed an enlargement of the thyroid gland, more marked on the right side which is now about the size of a hen's egg. Marked nervous symptoms, accompanied with tachycardia, are present with the enlargement. Urinary examinations normal. Pulse rate before going to operating room, 150.

With the patient in a horizontal position, a tumor as large as the head of a one-year-old child was seen, located in the left side of the abdomen and immediately beneath the ribs, approximately immediately in front of the left kidney. This tumor was perfectly smooth to touch, was elastic and freely movable, so that when lifted out of the left loin and pushed downwards it simulated exactly, in location and feeling, a cyst of the left uterine appendage. By vaginal examination no connection could be made between the tumor and the pelvic organs.

The abdomen was opened by median incision, extending from a point half-way between the pubes and the umbilicus upward to a point half-way between the umbilicus and the ensiform cartilage. The tumor was found to lie behind the lesser omentum, the transverse colon coursing over its lower pole and being adherent to it. On dividing the gastro-colonic omentum the sac of the tumor was encountered and was found to be adherent on all sides to neighboring structures. By dissection with the finger, it was finally lifted out from its bed in the lesser cavity of the omentum and finally remained attached only to the tail of the pancreas. The pancreas and the posterior wall of the stomach were in plain view in the field, and were immediately above the tumor and in contact with it. The attachment to the pancreas is now tied off and the tumor freed and removed. Bleeding, during the process of enucleation, was not severe, was chiefly venous, and was easily controlled by ligature. The incision through the lesser omentum was closed by catgut suture, except at its upper part, where it gave access to a drainage tube of gauze covered with rubber tissue. This drain was brought out through the abdominal wall about two inches to the left of the median line, opposite the upper portion of the incision. The first incision was closed with silkworm gut suture.

The wall of the tumor was of fibrous tissue, fairly strong and thick. The contents of the tumor consisted of a thick liquid, dark brown in color, looking for all the world like rich chocolate. The tumor weighed six pounds. Uneventful convalescence. Discharged July 23, 1902.

URETERO-URETERAL ANASTOMOSIS.*

BY GEORGE BEN JOHNSTON, M.D.,

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The unintentional division of the ureter during operation in the abdominal and pelvic cavities is not of frequent occurrence. Nevertheless, this accident is apt to occur in cases in which numerous adhesions exist and the anatomical relations are much disturbed. The ureter may so far be displaced from its normal position and so completely embedded in a mass of adhesions as to make its identification practically an impossibility. In the event of such an accident, a decision as to the best procedure to follow is of paramount importance. Several methods of dealing with the condition are at hand.

1. The kidney on the injured side may be removed.
2. The ureter may be passed into the small intestine, colon or rectum, into the vagina or through the abdominal wall.
3. The kidney may be brought down and the extremity of the ureter sutured into the wall of the bladder.
4. An anastomosis may be made between the extremities of the divided ureter.

This classification, while not exhaustive, covers the most important procedures so far devised. Of these methods, the last two are most worthy of consideration. Uretero-ureteral anastomosis, would seem to be the operation of choice.

Uretero-ureteral anastomosis, or uretero-ureterostomy, as the operation is designated by Kelly, may be performed in various ways. Henry Morris gives the following classification:

1. End to end anastomosis by suturing the ends together in a transverse line.
2. The end to end anastomosis.
3. Lateral implantation.
4. End to end anastomosis by suturing the ends together in an oblique line.

The transverse end to end method was used by Schopf (1886) in the first recorded case of uretero-ureteral anastomosis. The objections to the operation are so serious that it is practically never performed to-day.

* Read before the Southern Surgical and Gynecological Association, Cincinnati, Ohio, Nov. 11-13, 1902.

Poggi originated the end to end anastomosis. Lateral implantation was devised and described by Van Hook in 1893. Kelly was the first to apply this method to the human subject. The oblique end to end anastomosis was first used by Bovée.

To the cases of uretero-ureteral anastomosis already reported we are able to add another. This case presents points of sufficient interest to merit description. As will be seen later, a modified Van Hook method was used in making the anastomosis.

Case of Ada Christian: aged forty-one years; negress; married; housewife; American by birth.

Family History. Negative.

Previous History. Healthy child. Menstruated at fifteen. Had pertussis and malaria at sixteen. Married at seventeen. Had five children, of whom three are living and in good health. Last confinement sixteen years ago, at which time she gave birth to twins, both now dead. Since the birth of the twins, has suffered with dysmenorrhea and menorrhagia and with leucorrhea at times; also with pain in back and limbs, especially after exertion. She has been subject to sick headache and has had "chills and fever" occasionally. With the above exceptions, her health has been uniformly good.

Present illness. About six years ago the patient noticed on the left side of the abdomen a mass about the size of her fist. For three years the mass grew rather slowly, reaching at the end of that time a size sufficient to distend perceptibly the whole abdomen. During the next three years the growth was much more rapid. At the time when the tumor was first noticed the patient began to experience severe pain at the menstrual periods. The pain was felt for a week before the flow began and it continued throughout the period. The flow lasted for a week or ten days and was profuse. For three years this condition obtained. Thereafter the pain and menorrhagia continued, but with moderated severity. For the past five months there has been considerable flow between the periods. During this same time she has suffered from poor appetite, flatulent dyspepsia, coated tongue, constipation, frequent and painful urination. There has been considerable loss of flesh and strength during the past summer.

Patient admitted to Old Dominion Hospital September 13, 1902, referred by Dr. J. D. Turner, Lanexa, Va. Examination showed a large tumor springing from the pelvis and filling two-thirds of the abdominal cavity. The tumor was generally adherent. Diagnosis, intra-ligamentous fibromyoma of uterus with adhesions.

Operation; October 1, 1902. Chloroform was administered; later

in the operation ether was substituted. A median incision was made extending from a point midway between the umbilicus and the ensiform cartilage down to within a short distance of the symphysis pubis. The large tumor bulged out through the opening. Examination showed that it was an intraligamentous fibromyoma of the uterus with extensive adhesions to neighboring structures. The anterior abdominal wall, omentum, intestines, broad ligament and bladder were all involved in the adhesions. The bladder was spread out over the front of the tumor and adherent. Numerous very large dilated and tortuous veins could be seen. The anatomical relations were much distorted. As far as possible the adhesions were broken up by blunt dissection. Masses of adhesions including vessels were ligated with heavy silk and cut away; about twenty-five such ligatures were required. After the tumor had been freed, a panhysterectomy was performed. The appendix was found to be in a condition of chronic inflammation and was removed. After delivery of the tumor it was found that the left ureter, embedded in a mass of adhesions, had been ligated and divided transversely about two inches above its entrance into the bladder. Uretero-ureteral anastomosis was then made in a manner presently to be described. The walls of the vagina were stitched together, leaving a sufficient opening for drainage; a gauze drain was passed down from above through this opening. The edges of the vaginal wound were covered with gauze, since the peritoneum could not be stitched over the raw surface. The toilet of the peritoneum was completed and the abdominal incision closed by interrupted sutures. Time of operation, one and a half hour.

Method of Making Uretero-Ureteral Anastomosis.—A longitudinal incision $\frac{1}{4}$ of an inch long was made anteriorly in the distal portion of the ureter $\frac{3}{8}$ of an inch below the free extremity. A small cambric sewing needle, threaded with fine silk, was passed through the anterior aspect of the proximal portion of the ureter $\frac{1}{8}$ of an inch from the extremity. The needle was then carried through the slit in the distal portion, down the ureter $\frac{1}{2}$ inch and out through the posterior wall of the ureter. The other end of the silk was threaded and the needle passed in a similar manner. The proximal portion was drawn through the slit down into the distal portion and held in place by this traction suture. The edges of the slit were united to the wall of the invaginated proximal portion by interrupted sutures of fine silk; these sutures were passed through the fibrous and muscular coats of the ureter. A probe passed through the unclosed end of the distal portion showed that the lumen was patent. Through the distal extremity a

purse-string suture of fine silk was passed and the end closed. The traction suture was then removed and the point of anastomosis covered by a strip of gauze, the end of which was passed into the vagina.

Subsequent History.—The patient left the operating table much weakened and for twenty-four hours was in a critical condition. She was supported by stimulants and infusions of normal saline. Her bowels were kept closed for three days. Thirty-six hours after operation she developed a well marked broncho-pneumonia from which she recovered after seven days.

The morning after operation eight ounces of urine were obtained by catheterization of the bladder; thereafter she voided her urine without difficulty and passed daily about a normal quantity. On the day following operation, 29 ounces of urine were passed and on the next day 26 ounces. Frequent examinations of the urine were made. These examinations showed the presence of a trace of albumen and considerable pus. Urinalysis of a catheterized specimen made Oct. 14 showed the following:

Specific gravity: 1018.

Reaction: acid.

Color: amber and turbid.

Albumin: none.

Sugar: none.

Microscopic findings: a few epithelial cells, pus, neutral calcium phosphate and amorphous urates.

Examination of another catheterized specimen made on Oct. 25 was reported as follows:

Specific gravity: 1008.

Reaction: acid.

Color: light amber, slightly turbid.

Albumin: none.

Sugar: none.

Amount: 28½ oz.

Microscopic findings: small amount of sediment, epithelium, pus and amorphous urates.

On October 26 she passed in twenty-four hours, 28½ ounces of urine.

The patient made a perfect recovery and was dismissed from the hospital on October 29, the urinary tracts functioning perfectly.

MOVABLE RIGHT KIDNEY AND CHRONIC APPENDICITIS.*

BY WALTER P. MANTON, M.D.,

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Recent investigations in the morbid anatomy of the appendix ceci and increasing operative experience in the treatment of inflammations of that organ have advanced our knowledge in regard to a large number of hitherto obscure abdominal symptoms, but the etiology of appendicular disorders has not as yet been satisfactorily settled. The teachings of men of large clinical experience have rendered the diagnosis of acute appendicular disease familiar to the majority of practitioners, but the chronic form of the disorder, a process capable of giving rise to great discomfort and physical suffering, still remains to a large extent unrecognized, the afflicted individual often being subjected to a variety of treatments directed to nearly every abdominal viscus save the right one.

In this paper I desire to direct renewed attention to a condition which bears immediately on the etiology of this chronic form of appendicitis. In my experience nephroptosis is the most frequent cause of chronic appendicular disease. In 1894, Edebohls called attention to the frequent association of chronic appendicitis and movable right kidney, but, although a number of papers by the same author and others have since appeared, the profession has not yet learned to connect the two conditions. This is probably due to the fact that under these circumstances the classical symptoms of appendicitis are generally wanting, and also because prolapsed kidney, unless of marked degree, is not easily recognized except by the expert.

While numerous statistics have already appeared relative to movable right kidney in women, I have thought it best at the present time to restrict my data to personal observations, and have therefore, as a basis for deduction, gone over the histories of the last two hundred cases recorded in my note books. These cases consequently are not selected, but represent the usual run of patients who consult the specialist for real or fancied ailments. Of the 200 cases, 73 (or 36½ per cent)

* Read before the 15th Annual Session of the Southern Surgical and Gynecological Association, Cincinnati, O., Nov. 11-13, 1902.

showed an abnormal mobility of the right kidney. This consisted of a downward movement, varying from 1 to 3 inches to a displacement into the right iliac fossa. Of these 73 patients, in 48 (or nearly 65½ per cent), chronic appendicitis was also diagnosticated. Eleven, or 22½ per cent of this number came to operation and thus served to confirm the diagnosis. Of the operated cases all were relieved symptomatically. Among the remaining patients either the condition was of too mild a type to demand immediate intervention, operation was refused or the patient is now awaiting this operation.

From the foregoing figures it is evident that movable right kidney is a cause, the effects of which are manifested in a morbid condition of the appendix, and that the very frequent concomitance of the two conditions is not merely the result of accident. How this relationship is to be explained is more difficult of solution, and after careful study of the subject for several years I have found no better theory for its occurrence than that advanced by Edebohls, namely, that the movable right kidney compresses the superior mesenteric vessels between the head of the pancreas and the spinal vertebræ, thus interfering with the circulation in the appendix—at best a poorly nourished rudiment—and giving rise to congestion and subsequent inflammation of the organ. The symptoms produced by the combined conditions may be referred to the kidney, to the appendix, or to both, but in a large number of these cases neither organ appears to be involved until careful examination shows them to be the seat of the trouble.

For determining the kidney mobility, the examination may be undertaken with the patient standing, but, for the expert, the dorsal position with the legs flexed will be found preferable. The diagnosis of disease of the appendix is not always easy, and must be based on a thickening or impaired mobility of the cecum or colon, and sensitiveness about the umbilicus or at any point from the normal position of the appendix downward and into the right iliac fossa. A pelvic examination in these cases is imperative, disease of the right appendages with thickening or adhesions running upward toward the cecum almost invariably indicating involvement of the appendix.

Two points I desire to emphasize: (1) With obscure abdominal conditions, even when no pelvic disorder is discoverable, a diagnosis should not be attempted until movable kidney and appendicular disease can be excluded by careful abdominal palpation, (2) When nephroptosis and appendicitis are present, operations upon the uterus and adnexa alone will not be followed by cure of the patient unless one or both of these conditions have also been removed.

In regard to the necessity of anchoring the kidney and removing the appendix at the same time, this will largely depend upon the conditions present. In movable kidney of the first degree the ablation of the appendix alone will generally be all that is necessary. In prolapse of the second degree both operations may be necessary according to the severity of the symptoms; but in ptosis of the third degree both the kidney and the appendix should receive attention. On the other hand, if the appendicitis is of a mild type and the nephroptosis marked, generally, the mere fixing of the kidney to the lumbar wall will, by restoring the circulation in the appendix, cause the latter to resume its normal condition or at least will result in a cessation of symptoms.

32 Adams Ave., W.

PRESIDENTIAL ADDRESS.*

By W. E. B. DAVIS, M.D.,
Birmingham, Ala.

Members of the Southern Surgical and Gynecological Association:

I desire, first of all, to express my profound appreciation for the distinguished honor you did me at our last meeting, in elevating me to the highest position in your gift. The Association's history is one of brilliant achievements, which are to-day recognized throughout the world. You will not consider it inappropriate, I am sure, for me to discuss the early history of the Association and the events immediately preceding the perfection of the organization.

In November, 1886, a few prominent physicians, of Birmingham, met in the office of the *Alabama Medical and Surgical Journal*, of which my brother, J. D. S. Davis, and I were editors, for the purpose of organizing the Alabama Surgical and Gynecological Association. As a result of this conference a meeting for permanent organization was called for December 15, 1886. There were invited to this meeting fifty of Alabama's leading men, some of whom did not do a great deal of surgery and gynecology, but who were prominent physicians, and whose influence it was thought would be of great service to the organization. The attendance at the meeting for permanent organization was fairly good and letters were received from those who could not attend signifying their sympathy for such an organization and their desire to

* Delivered before the fifteenth annual session of the Southern Surgical and Gynecological Association, at Cincinnati, O., Nov. 11-13, 1902.

become members. Dr. H. N. Rosser, of Birmingham, was elected President and I was made Secretary.

The *Alabama Medical and Surgical Journal*, in its editorials, urged the necessity of the organization for the development of these departments in the State. It was insisted that this Association would not in any way conflict with the Medical Association of the State of Alabama, as its work was entirely scientific and would in no way have to do with the State's ethical and sanitary affairs. I herewith quote from an editorial in the December number (1886) of the *Alabama Medical and Surgical Journal*:

"The Association will be organized in Birmingham on the 15th of December, and will have purely for its object the advancement of surgery and gynecology in the State. It will have nothing to do with the medical laws and ethics of the State, but will leave these for the State Medical Association, which it will endeavor to help in the great work it is doing in the organization of the profession of Alabama.

"The Alabama Surgical and Gynecological Association will, in no way whatever, conflict with the State Medical Association, but will be composed of some of its best members, who will do good work in both societies. It will be organized for scientific purposes and will conflict with no association now in existence. It will be the aim of its charter members to make it an honor for any physician to hold its certificate of membership. It will afford a field for active workers in the departments of surgery and gynecology never before enjoyed by Alabama physicians.

"The Alabama Medical Association affords opportunity for some general work in these departments, which is very good so far as it goes, but is too limited. This association will expect its members to study these departments as sciences, and to be able to add something to our already rich store of knowledge. To the Alabama State Medical Association is due the honor for the almost perfect organization of the profession of the State, and to keep this organization complete, with some general work, is enough for one society. It generally requires most of its sessions to hear the reports from the sub-organizations of the State. This Society will have nothing to do with this class of work, but its time will be entirely devoted to the reading and discussion of papers pertaining to surgery and gynecology.

"The committee has invited only fifty members to take part in the permanent organization of the Association, as it was thought that the requirements for membership and the plans for its future success could best be formulated by a few active men.

"The success of the Association is assured, and we trust that it will receive the sympathy and co-operation of the profession of the entire State!"

At the meeting for permanent organization a dozen of the leading surgeons of the South were elected honorary members with a view to the formation of a Southern organization later with these distinguished men as a nucleus. Some of these advised that the Southern organization be formed at once, but I expressed the opinion that I thought the Southern States needed, for several years, such organizations as the Alabama Surgical and Gynecological Association, so as to develop suitable material for the larger and more exclusive body. I further stated that we had very, very few men in Alabama who would be eligible to membership in such a society. It was my opinion that the State organizations should continue intact and that the more distinguished members should be elected to membership in the Southern Association. They would not sever their relations with the State special societies, but on the contrary, would be more active in their work for the State organizations so as to develop worthy material and thus furnish members later for the larger organization.

As mentioned, it was deemed best to have a State organization for some length of time in order to bring into prominence a larger number of men in these departments. The Alabama Association began most auspiciously, having the leading men of the State, with but few exceptions, on the roll of membership.

The early extension of the Alabama Association into the Southern Surgical and Gynecological Association was due entirely to Dr. Jerome Cochran, of Alabama. He was the greatest medical organizer, perhaps, the world has ever known, and had already made the State Medical Association of Alabama the model State organization of this country. It had not been fully appreciated by the American profession at that time, but, as you all know, is now being very largely copied and quoted as a model for the organization of the profession of our entire country. He apprehended trouble from the new organization and at once began to discourage its support by these excellent men, who, with but very few exceptions, were already strong supporters of the Alabama Medical Association. Unfortunately for the new Association its President, Dr. Rosser, was not regarded by Dr. Cochran as in full sympathy with the old Association. Dr. Cochran was also suspicious of the editors of the *Alabama Medical and Surgical Journal* because they differed with him on some important points in connection with the management of the State Medical Association, notwithstanding the fact that

the editors had expressed themselves so fully in sympathy with the organization and had in every way demonstrated their loyalty to it. However, Dr. Cochran could not tolerate differences of opinion. He regarded the man who differed with him as his enemy always. Particularly was this so in regard to matters pertaining to the Alabama Medical Association. It was because we advocated examinations by a State Board instead of by County Boards, which were deficient then and will always be deficient, and also advocated doing away with examinations by the State Board of applicants who are not medical graduates that lost us his confidence. He wrote to many of the members discouraging their co-operation in the new organization, and when I returned, in July, 1887, from a trip abroad, having been absent six or seven months, I found a large number of the members of the Association rather indifferent as to the success of the new organization. I was at once impressed that it would be impracticable to attempt to accomplish much in Alabama with such an Association with Dr. Cochran against it, as he had the Alabama Medical Association so well in hand, having devoted his entire time to it for many years, not doing any practice whatever. Few, ambitious for position in the Association, would dare go against his will. Those who have studied the organization will understand how completely it could be made a one man's power by his devoting his entire time to that end, and especially if he had a giant mind such as Dr. Cochran's.

When it was decided by some of the leaders of the Alabama Association to extend the organization, the honorary members were conferred with and they, with but few exceptions, approved of the plan. I remember that Dr. Yandell wrote me that he thought the union would prove rather an unsatisfactory one, as the general surgeon would not enjoy listening to a gynecologist discuss dysmenorrhea and the gynecologist would have very little interest in the treatment of a fracture of the thigh. Yet with so great a surgeon speaking disparagingly of it—and this was the first association where the surgeons and gynecologists were combined in this way—its name has anticipated what may be expected in the future. Indeed, purely gynecologic societies will prove less frequent with each recurring year. After conferring with a large number of the members of the new organization, a letter signed by the President and Secretary was sent to the representative men throughout the South inviting them to attend the approaching meeting of the Alabama Surgical and Gynecological Association, October 11th and 12th, 1887, with a view of forming the Southern Surgical and Gynecological Association. They were asked to express their opinion of such an

organization and to signify whether they would be willing or not to be placed upon its roll of members. There were about 80 favorable replies to these letters. Among those who expressed very great enthusiasm to see the organization a truly representative Southern special society was Dr. W. D. Haggard, of Nashville, the father of our Secretary. He was very active in his efforts in behalf of the proposed organization. Indeed, his services were of inestimable value in the early history of the organization.

At the meeting of the Alabama Surgical and Gynecological Association, which convened in Birmingham, October 11, 1887, a fairly good programme was carried out and on the second day of the meeting the question of the formation of the Southern Association was brought before the body. There were only a few outside of Alabama present. Among them were Drs. W. D. Haggard, of Nashville, W. F. Hyer, of Holly Springs, Miss., and J. S. Cain, of Nashville. Yet the Secretary had in his possession, as has been stated, letters from about eighty representative men, signifying their desire to have their names placed upon the roll of membership of such an Association. Accordingly, the organization was perfected on October 12th. Dr. W. D. Haggard was elected President and I was made the Secretary. Dr. J. S. Cain, of Nashville, was elected Chairman of the then Judicial Council. The ablest men in the South, although absent, were elected to fill the other places on the Council and were wired for their acceptances and they promptly responded in the affirmative. Birmingham was selected as the next place of meeting and the second Tuesday of November, 1888, as the time for the same; but on account of yellow fever in the South the meeting was held on the 4th, 5th, and 6th of December. Recurring to the meeting for permanent organization, a Committee was appointed, of which the Secretary was made Chairman, which was empowered to solicit suitable members for the Association during the time intervening till the first regular meeting. This Committee was empowered to place those who accepted membership and paid their dues on the roll as Founder Members of the Association. When the meeting was held the Association had enrolled about ninety members. Unfortunately for the organization, all of the members of the Alabama Association who desired to go into the Southern Association were permitted to do so. This necessarily admitted some members who should not have been received into the enlarged organization. It took several years to overcome this unfortunate complication.

It was the ambition of a number of the members to have this Association patterned after the American Gynecological Society as far as

possible. Hence, it had great obstacles to overcome inasmuch as there were so few men in the South of great reputation compared with the cities of the North and East, and inasmuch as we had already received some men who were not eligible to membership in such an organization. This problem had to be dealt with very delicately and tactfully, so as to allow the undesirable members to be eliminated without any notable friction. This will explain why the names of those who resigned or died for a number of years were not published in the Transactions. It would have been peculiarly unfortunate to have had the sketch of the life of an unknown man in Alabama appear in the Transactions, which would have been read by many eminent surgeons, who would have judged the Association by this example. However, by tact on the part of the Council and Secretary these men have gradually disappeared from the roll, having been dropped as a rule for non-attendance or the non-payment of dues, there being a by-law which provides that "a member who fails to attend for three consecutive meetings shall be dropped from the roll," and another, "that a member failing to pay his dues for one year shall be dropped."

It was soon ascertained that there were not enough surgeons residing in the South, of reputation and ambition to attend such meetings, who could be gotten in sufficient numbers for a successful session, except in two or three cities of the South, and the Secretary urged the Council to invite men of great eminence from the entire country to join the Association. It was argued that they would constitute an inspiration for the Southern men and assist in making our meetings more successful. Good men in the South who had not been known before and whose reputations would not have admitted them to the national special societies met these men from other sections of the country, and as a result the majority of the deserving men of the South are now members of some of the national special societies.

The meeting in Birmingham proved to be quite successful, and while the Association had not provided an official stenographer the papers formed a most excellent volume of Transactions. Dr. Hunter McGuire was not in attendance, but having expressed his hearty sympathy for the organization, the members present decided that he was the man to place at the head of the organization, and accordingly he was elected President—having previously signified his willingness, by telegram, to accept the office. When it became known that Dr. McGuire had accepted the Presidency and was in sympathy with the organization its success seemed fully assured.

The second meeting which was held in Nashville under his Presi-

dency was a splendid success, and the discussions were reported in a superb manner by Dr. Wm. Whitford, who has been our official stenographer ever since. The volume of Transactions of this meeting was one of the most handsome of the special societies of this country and was complimented alike by the journals of the North and South. Indeed, there were favorable expressions in foreign journals of this splendid new organization. Dr. Geo. J. Engelmann was elected President to succeed Dr. McGuire, and the Atlanta meeting under his Presidency was a most successful one. On this occasion, among the notable Southern men present were Drs. Henry F. Campbell and Dr. Robt. Battey. I am sorry to have to say that Dr. Battey was one of the very few men of national reputation in the South who failed to join the organization. It so happened that this Association and the American Association of Obstetricians and Gynecologists were organized the same year, and as the American Gynecological Society looked with suspicion upon any thing gynecological that was organized at that time, this accounted for Dr. Battey's remaining out of the Association. When he was President of the Tri-State Medical Society, of Alabama, Georgia, and Tennessee, which met in Chattanooga in 1891, we dined together and he told me that it was because the members of the American Gynecological Society had felt the necessity of fostering their strength that he had withheld his name from this Association.

We invited as members, first, all the Fellows, who resided in the South, of the American Surgical Association and the American Gynecological Society. These we regarded as a splendid nucleus around which to build. It was for this reason, as stated above, that these same men were elected honorary members of the Alabama Association when that organization was formed, that they might be in sympathy and of service in the enlarged organization. Some of these were never very enthusiastic, and I am sorry to say did little active work to help the young organization struggling for existence. However, their names on the roll of members were of inestimable service. I felt then as I feel now, and as I wrote Dr. Kinloch, when he resigned several years before his death, that these men, even though they might not be benefited by holding membership, owed it to the South to lend their names and influence to an association which had for its purpose the development of these departments in the South and the bringing forward of worthy men, who otherwise would have remained unknown in all probability. I am glad to be able to say for them that they, with two or three exceptions, did not withhold their names. Some of them who were very indifferent in the early history of the Association, later became enthu-

siastic members. They should not be censured for having looked with suspicion on the organization at first, inasmuch as it received so many members who were not eligible for membership in such an association. They could not know then that we would so soon eliminate the objectionable features and make the Association in every way one of the foremost special societies in the country.

There arose considerable prejudice in the South, in 1886, against such an organization as was proposed, as is illustrated by an editorial in one of the leading journals of that year. In the spring of 1886, The Association of American Physicians was organized, and the editor of one of the most prominent journals of the South, one that was largely copied and quoted throughout the South, criticized its members very severely for calling it "*The American Association*," when its membership had been limited to 100, and inasmuch as they were, with few exceptions, from New York, Boston, and Philadelphia. The prejudice was against the assumption of so great a name for so small an organization. Indeed, it was a question how The Southern Association should be broached without being met with a number of denunciatory editorials. In order to overcome this prejudice and the previously expressed opinion in regard to such an organization, no mention of limitation of membership occurred in the letter which was sent out inviting the members of the profession to join the Association, and furthermore, to the leading editors there were written personal letters inviting them to attend the meeting as the special guests of the Association. The Secretary also took great pains to write them fully and repeatedly in regard to the meeting, emphasizing the great need in the South of such an organization. Without an exception they appreciated the situation and advocated its purposes in strong terms. Some of them were not in a position to pay for special reports of the meetings, and for two or three years the Secretary had this done at the Association's expense, so that the proceedings might be adequately distributed throughout the South. These southern journals have been the mainstay of the Association, as will be abundantly testified to by those who have been most active in the carrying on of the work of the organization.

I was very much amused when a distinguished editor of one of our best and oldest journals, in 1887, wrote me that 100 men could not be found in the South who would pay \$10 annual dues. I wrote him that we had more than that many in Alabama who would do so, and if the honor were made great enough they would pay \$100 dues. It all depended upon how much value was placed upon membership. In this connection I may say that Dr. Jerome Cochran, when he saw that the

Association had succeeded and realized that I had been loyal to the State Association, became not only my friend, but a supporter of the Southern Association.

Dr. E. H. Sholl, who is one of Alabama's greatest physicians and noblest of men, who gave his undivided support to the organization in its early history, when it most needed help, at the New Orleans meeting, Dr. Cochran being present, in speaking of Dr. Bedford Brown's Presidential Address, said:

"I stand with amazement as I see before me so many brilliant men who have taken the deepest interest in this Association. One of its beautiful and striking features is that it ignores any limitation of latitude. It is recognized at all times and on all occasions, and characterized by the unity and harmony of our glorious profession, full-orbed in its type and vigorous manhood. Already in its sixth year of existence, it is not only a recognized factor in the South, but it meets with the approval of our distinguished brethren of the North and West, who are participating in its proceedings; who are helping to bring it to the front, making it one of the greatest associations of its kind in the United States. I say this unhesitatingly, because its work has been recognized both at home and abroad. I call to witness Dr. Jerome Cochran, by whose side I have labored for so many years, to testify to this fact that it has been an inspiration everywhere in the work of our own State. It has been a kindred movement which has impelled us in a new line. In the great work Dr. Cochran has done in the development of quarantine, we have stood by his side; we have worked with him with unity of purpose. I am proud to say that this Association knows no North; but it recognizes a broad intellectual grasp in its researches."

The address of Dr. Bedford Brown dealt with the Association as it was in its sixth year of existence. Dr. Brown was not present at the meeting for permanent organization. Its founders did not desire that it should embrace the classes of membership he so fully and ably set forth. This condition obtained because, as I have already explained, the Association was the Alabama Association enlarged, which necessarily carried with it the classes of members referred to.

Recurring again to the prominent surgeons and gynecologists of the South at the time the Association was formed, I desire to say that their names and influence enabled the Association to occupy the position in the South to which it aspired—without this support it would certainly have failed. Too much honor cannot be done Haggard, McGuire, Bedford Brown, and Kollock, ex-Presidents of the Association, who have gone to their reward. Suitable sketches of their lives should

be published in the Transactions of this year and engravings should be made from the best photographs obtainable. In this volume I would also request the same for Yandell, Briggs, Mastin, Campbell, Westmoreland, Kinloch, Michel, Miles, and Rohé.

Since our last meeting death has claimed one of our most beloved members. He was esteemed by us all; I refer to Dr. James T. Jelks. I would suggest that the Secretary have prepared for the present volume of Transactions a suitable sketch of his life.

The Association for several meetings had memorials presented of the lives, etc., of a number of the South's most illustrious sons, but the Transactions do not furnish likenesses of these men. Would it not be well to secure good photographs and have cuts made for this volume? Under each picture suitable reference should be made as to the volume in which the memorial address is published. Such addresses have been read on the lives of McDowell, Dudley, Stone, Sims, and Paul F. Eve. It is probable that cuts could be procured from their families without cost to the Association.

I would also recommend that a suitable sketch of the life of Robt. Battey be procured for the next volume of the Transactions and that it be accompanied with a good engraving.

When the Association was organized it was deemed advisable that there should be but one class of membership, but after seven years it decided to have honorary members. I now desire to recommend that we have another class of membership to be known as Life Members. They are to have all the privileges of ordinary members and are to be exempt from dues. I would advise that the following classes of members be eligible for consideration by the Council for this honor, provided they are men of great eminence in the profession:

1st. Those who have been members twenty years and have attended 50 per cent. of the meetings.

2d. Those who are more than sixty-five years of age.

I desire to recommend Dr. J. McF. Gaston, of Atlanta, an ex-President of the Association, and a man who has won great distinction in the profession; Dr. R. B. Maury, of Memphis, who was a devoted member of the Association in its early history and who is well known for his high position in the profession, and Dr. Thad. A. Reamy, of this city, one of the most distinguished gynecologists of America and a devoted member of the Association, for this class of membership. They are all more than sixty-five years of age, and have ceased doing very active practice.

When Dr. Haggard was elected Secretary, I recommended that his

salary be made \$400, but the majority of the Council thought that \$250 would be sufficient. I want again to insist that the Secretary's salary be increased. Indeed, it is my opinion that we should not pay him less than \$500. In the language of Dr. Jos. Taber Johnson, who has had great experience as Secretary of one of the best societies of America: "The members of a society scarcely realize the amount of work which is represented by the finished programmes and volumes of transactions which reach them through the mail. The ordinary notices of the place and time of meeting, the solicitations of members to write papers, their orderly and systematic arrangement in groups, their assignment to particular days and hours to suit the wish or convenience of their authors, the preparation for the printer and the subsequent interviews with that important personage, the large correspondence, his necessary and prompt attendance at all the meetings of the society and of its council, the reconciling of many conflicting interests, the securing of the papers, in proper form for the printer, from their frequently dilatory authors, the editing of the discussions, and, finally, of the entire volume of transactions in the very creditable and elegant shape in which it finally reaches us." Our Association is peculiarly fortunate in having so able a Secretary, and one who takes so deep an interest in everything pertaining to its affairs.

At the beginning, the Association insisted on paying me for services as Secretary, but I declined to accept such salary, and only received a small amount, scarcely sufficient to cover necessary expenses. It was my ambition to save a considerable sum and publish a memorial volume for the Association on abdominal surgery. However, this was found to be impracticable, as it would have caused some members to feel slighted, and thus factions would have been created in the Association. I then desired to see some sort of a memorial built in Birmingham, the birthplace of the Association. However, the funds of the Association have never been sufficient to justify this. I now desire to recommend to the Association that it requests the City and County Hospital, which will be built in Birmingham during the coming year, to name the ward for the surgical diseases of women, The Southern Surgical and Gynecological Association Ward. I would also ask the Association to request the Hospital to name the negro gynecological ward for Marion Sims, in as much as his great work was done in Alabama and on negro women. I make these requests as I am confident the Board of Managers of the Hospital would gladly grant them.

Some years ago the Association limited its membership to 150. I would suggest that the limitation of membership now be made 200, and

that only such men as would be eligible to membership in the leading national special societies be regarded as eligible to this Association. No greater mistake can be made than in taking men of immature age and professional experience. These men often turn out badly and the prestige of the Association is destroyed in their cities and often in the entire State in which they live.

We want the Association to continue to hold its meetings in the South, and in Cincinnati, and we desire all the great surgeons and gynecologists of this country to join with us in these meetings.

I will again insist upon what I asked for the American Medical Association, in my Presidential Address, last year, to the American Association of Obstetricians and Gynecologists. I quote from that address as follows :

"The need of specialism in the profession and of special societies for the promotion of the several specialties have been ably and most exhaustively treated by our foremost men. The national special societies have wielded a wonderful influence in the profession and have added greatly to our reputation abroad. Our medical literature has been enhanced in every way through them. They have been incentives to higher aims and better work in all departments. As individual societies they should be encouraged, but their union into a national congress or association is not conducive to the best interests of the American profession. The greatest and most influential organization of the United States should be the AMERICAN MEDICAL ASSOCIATION. Both the specialists and the general practitioners of this country should belong to that Association and take pride in their membership and exert their best energies in behalf of its meetings, as urged by our fellow, Dr. Wright. Many of our ablest men, as claimed by him, have been conspicuous by their absence. Failure to be an active contributor to the work of this national organization should be a justly deserved reflection on a prominent physician, whether he be a general practitioner or a specialist. Several years ago there was some reason for the want of interest in the organization, as there was too much politics and too little scientific work. However, for the past few years the scientific work of the Sections has been of a high order, and a great deal has been accomplished in the time allowed. With the adoption of the new organization providing for the House of Delegates to take charge of all business matters and questions of a judicial or personal nature, more time will be provided for scientific work, the Sections having as many sessions as provided for the meetings of our national special societies. The special societies, composed as they are of leaders in the several specialties, are

under obligations to the American profession to assist in the better organization of these Sections. Many of the members of these societies are officers and active working members of the Sections of the American Medical Association and can accomplish this result. There must be one class of membership for the Section that can be held by only those who are recognized as teachers and leaders in order to make membership very desirable and sought after. I would suggest that this class be known as Fellows and that they pay, in addition to the annual dues of the Association, \$5 annually for Section dues, which fund should be expended in the publication of the proceedings of the Section. The officers and authors of papers should come from the Fellows. All members would have the privilege of taking part in the discussions and thus an opportunity would be provided for the ordinary or Association members to show themselves worthy of a fellowship. Such an organization of the Sections with volumes of Transactions, publishing a list of the Fellows, would give stability and a permanency to the Section work that could scarcely be had in any other way. With the House of Delegates for the general association and the Roll of Fellows and Association Members for each of the Sections, we would become the most scientific and influential medical organization the world has ever known."

At a recent banquet to the medical profession, in speaking of the profession of the South and the reasons why many of our best men some years ago had moved to New York and other northern cities to practice their profession, I said:

"This has been due in a measure to the fact that the fees in the South for professional services have been too small adequately to remunerate them for their services. However, with the South's great increase in wealth, this condition should no longer obtain. The public should be educated to know that an operation which involves the life of a patient should be liberally paid for. The total wealth of the South is as much as that of the United States in 1860. The value of our manufactures is now nearly equal to that of the whole country then. Says Mr. Edmondson: 'In the natural resources and advantages for the creation of wealth no other section of the world can equal the South. It has hardly commenced its real development. We have been simply scratching on the ground to find what we have. It produces three-fourths of the world's cotton crop, and yet we have only 7,500,000 spindles out of a total of 106,000,000 in America and Europe. We have more coal and iron than the North, and yet Pennsylvania, smaller than Alabama, has \$350,000,000 more capital invested in manufacturing than the fifteen southern states. In the words of a distinguished Eng-

lishman, "It is the Gibraltar of the lights and fuels of the world." No limit can be set to the potentialities of the South.*

It has been said that this is 'the golden age for the medical profession,' and I want to say that the profession of the South has been benefited as much as any other section of this country or abroad.

It is with pride that I refer to the early achievements of the surgeons of the Southern portion of our country. In the early dawn of the 19th century it was sparsely inhabited and patients came great distances to consult the surgeons of reputation. Hundreds of miles would often be traveled on horseback for this purpose. It is with mingled admiration and wonder that we contemplate, in 1809, a woman with a large ovarian cyst traveling on horseback more than sixty miles to Danville, Ky., to have it removed without an anæsthetic by that most remarkable of men, Ephraim McDowell, who thus became the father of abdominal surgery.

Fifty years later, in a small city in Alabama, plastic surgery had its origin in the invention of the speculum of Sims and in the genius who conceived it and perfected the operation for vesico-vaginal fistula. In the language of Haggard, 'You will sustain me when I claim that gynecic surgery with all its brilliant gems owes its present exalted position to the illustrious Sims, no less than abdominal surgery owes its origin to the world-renowned McDowell. They have conferred on the South the honor of being the birthplace of gynecology and the outcome of their labors has no parallel in the annals of surgery.'

Thirty years ago pelvic surgery was initiated in a small village in Georgia, and the patient whose ovaries were removed by the vaginal route, still lives in that community. It is true that Robert Battey did not have the correct conception of his operation and had not accepted the pathology as taught by Bernutz and Goupil. Yet his work accomplished the desired results, and our present pelvic surgery is largely the outcome of his operation. What a pity that he failed even to the last to comprehend that his operation was principally indicated for the removal of pathological conditions and was not a normal ovariectomy. I knew Dr. Battey well. He was a man of remarkable personality and aimed to keep surgery in good repute. His work did not cease till seven or eight years ago, yet he did not attempt very difficult pelvic cases or the removal of fibroid tumors, as his results had been disastrous from such operations and brought his operation into disrepute. He cured many of his cases not by the operation but by the three to six months' hospital care which his patients received. His teachings, however, as to normal ovariectomy led to great harm.

* *Alabama Medical Journal*, Oct., 1902.

McDowell, Sims, and Battey were epoch makers in surgery, but there resided in the South a number of other great surgeons. Dudley, of Kentucky, some years after McDowell, did 225 lithotomies with but two deaths, and was equally noted for his general work. After Dudley Paul F. Eve, of Tennessee, was the acknowledged leader in the South. His fame was so great that he was called to New York to teach surgery. Warren Stone, of New Orleans, became famous for his surgery, and established the first private surgical hospital in this country. Dugas, of Augusta, Ga., and Pope and McDowell, of St. Louis, were well known for their work.

During and after the war, the names of McGuire, of Virginia, Yandell, of Kentucky, Briggs and Rogers, Sr., of Tennessee, Kinloch, of South Carolina, Westmoreland, Sr., and Campbell, of Georgia, Gilmore, Nott, and Mastin, of Alabama, Richardson and Logan, of Louisiana, were well known in surgical history as contributors to surgical literature and were with few exceptions members of the national special societies.

Indeed, it has been truthfully said that 'the history of surgery would be incomplete and gynecology unwritten but for these bright stars of the South.' The lives of these men comprise much of the best that is in Southern history, and while they will very soon remain only a memory, yet much of their work has been preserved in the annals of that remarkable surgical and gynecological organization of the South, the Southern Surgical and Gynecological Association—a fitting organization for a land hallowed by the foot-prints of these great men.

The American profession has always been foremost in whatever was good for our country and after the civil war it was prominent in its efforts to break down the barriers between the sections. It was Dr. W. O. Baldwin, of Alabama, who in 1868, when the physicians of the South were invited to reunite with the American Medical Association, advised them to accept the invitation, and in the next meeting in Washington he was elected President. At the following meeting, held in New Orleans, he delivered a message as president 'which filled every reader of its contents with joy and bright hopes for the welfare of our country. It was full of patriotic sentiments so beautifully expressed that it created a sympathetic feeling between the two sections which has continued to increase from that time to this. It was one of the first movements which have bound the North and South so inseparably.' '*

*The part of the Address referring to the Southern profession was delivered at the Tri-State Medical Society Banquet in Birmingham, in Oct., 1902. See: *Alabama Medical Journal*, Oct., 1902.

A CASE OF CHOLECYSTECTOMY AND NEPHROPEXY.

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Though such cases are not very rare, the following one is reported with the hope that the combination of two unusual features—namely, a large number of gall stones and an enlarged gall bladder superimposed upon a movable kidney—may prove of some interest. The case also well illustrates some of the diagnostic points brought out in Prof. Kehr's excellent monograph on gall-stone disease.

Mrs. C. A., aged 33, was admitted to St. Luke's Hospital Aug. 17, 1902; family history negative; was very ill from typhoid fever when 10 years of age, but recovered completely; otherwise she had been healthy. She married at the age of 19, two years later became pregnant, and, after a normal confinement, gave birth to a child, who died of convulsions a week later. Seven months after this, she developed a mild attack of typhoid, but soon recovered. Shortly after convalescence she commenced suffering from what her physicians called indigestion, having sharp pains in her stomach with soreness and vomiting, sometimes lasting 24 hours. These attacks came with no regularity. They appeared to be worse in the spring. Occasionally, they would be almost continuous for months and again would not recur for some weeks. During the paroxysm breathing was difficult and the whole abdomen was sore for a day or two afterwards. There was pain in the back and all over the abdomen, but particularly in the right hypochondriac region. She had occasional pain in the womb; menstruation was regular. Since May, 1902, these attacks had been growing worse. She gave no history of jaundice, clay colored stools, or passage of gall stones in the feces. Examination on admission showed the sclera white, no evidence of jaundice, pelvic organs normal, with the exception of a mild endometritis. Patient was thin and of medium height. There was a slight general enteroptosis, the lower border of the stomach reaching almost to the umbilicus and liver dullness extending 5 cm. below the costal margin. There were tenderness and muscular rigidity on the right side, particularly in the hypochondriac region. With the patient supine, two tumors were felt in the lower part of the right lumbar region. They were about the same size, though of different shape and consistency. After slight manipulation the anterior one could be superimposed on the pos-

terior. It would slide from the grasp of the hands, though not with the same readiness as the posterior tumor would. Other abdominal or-



Fig. 1. Gall bladder; natural size.

gans appeared normal. Urine was free from albumin, pus or sugar, and was of good quantity; specific gravity 1018. Her temperature was normal and pulse 75.

Diagnosis, enlarged gall bladder containing calculi and movable right kidney.

Operation, Aug. 21; ether anesthesia. A straight cut through the outer border of right rectus about 9 cm. in length afforded abundant room, as the patient was thin. The incision began opposite the ninth rib. Palpation of the choledochus showed no stone there. The prolapsed liver was retracted and an enlarged thickened gall bladder fully exposed. It was adherent to the stomach, which was also prolapsed, and to the duodenum. After separating these adhesions and protecting the general peritoneal cavity with gauze, the gall bladder was de-

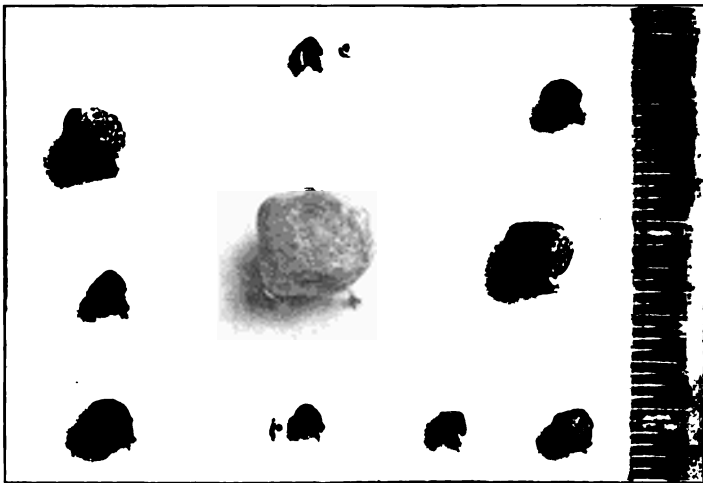


Fig. 2. Some of the gall stones.

livered into the wound, the peritoneal coat incised near its hepatic attachment, and the viscus with part of the cystic duct bluntly dissected from the liver. A large stone in the cystic duct was pushed back into the gall bladder, which was then divided between two clamps and removed. The cystic duct and artery were ligated *en masse* with medium-sized braided silk, the duct cut to within half a centimeter of the ligature, and the stump curetted and disinfected with a bichloride of mercury tablet. A few bleeding points in the bed of the gall bladder were tied and the abdominal wound was closed with through and through silk-worm gut sutures, no drainage being used. Primary union resulted, temperature did not rise above $99\frac{3}{5}^{\circ}$ F., nor pulse above 80. On Sept. 4, the kidney was fixed after the method of Edebohls. The wound healed primarily and the patient left the hospital, Oct. 2, feeling well.

The cuts show the natural size of some of the stones and the gall bladder (Fig. 1) which contained 475 gall stones. The largest one, shown in the center of the cut (Fig. 2), floats when placed in water; all the others sink, showing that the smaller ones are more impregnated with lime salts.

ATYPICAL CASES OF ECTOPIC GESTATION, ILLUSTRATING THE DIFFICULTY IN DIAGNOSIS.*

BY EGBERT H. GRANDIN, M.D.,

Gynecologist to the Columbus Hospital, New York City.

In view of the established fact that ectopic gestation is well nigh the most malignant affection of the genital system to which woman is subject, and in view of the facts that it is a condition frequently unrecognized, and that it is most amenable to treatment when recognized early, I trust I shall be pardoned for harping on it before this Alumni Association, the vast majority of the members of which—trained as they were at the old Charity and Maternity hospitals—can establish the diagnosis speedily and institute the only legitimate treatment.

I shall not weary you by dwelling on the classic symptomatology, which, when present, should lead even the tyro toward correct diagnosis. Unfortunately such symptomatology is the exception rather than the rule, and, therefore, he is the wise man who ever bears in mind certain axioms which I have established to my own satisfaction and on which I have laid stress in previous papers and in the course of many discussions. These axioms are: Any woman, whether married or single, during her period of sexual activity, may be subject to this malignant disease. Far more frequently than the reverse, the classic symptoms are obscure or even lacking. The conclusion drawn, therefore, is that the man who suspects every woman of having the condition is the man who is least liable to err in diagnosis. This rule I long ago laid down for myself with the result that I have made or concurred in the diagnosis in seventy-two cases of which I have record. A further axiom which appeals to me is that hemorrhage from the genitals of a woman who has subjected herself to the possi-

* Read before the Society of the Alumni of the City (Charity) Hospital, December 10, 1902.

bility of conception, means that if she be pregnant it is not after the normal fashion. A third axiom is that we should endeavor to forget the symptomatology of ectopic gestation copied from one text-book to another, and reconstruct a symptomatology which eliminates amenorrhea and enlargement of the uterus as symptoms, but which lays stress on the fact that colicky pain—that which I have termed “green apple” pain—is diagnostic of impending or actual rupture, and which insists upon resort to exploration through the posterior cul-de-sac as the means above all which will establish the diagnosis in doubtful and in obscure instances. Further still—and this is most important—any woman who complains of deviation from her normal as regards menstruation—such as a few days more or a few days less than is her custom—may be carrying an ectopic gestation, even though amenorrhea, hemorrhage, uterine enlargement, passage of decidua—each and all of these “text-book” accompaniments of ectopic gestation—be absent.

These points I shall endeavor to emphasize by the recital of a number of instances seen of late years and operated upon by me.

Case 1. A young woman, married a number of years and sterile with no precedent history of pelvic diseases. Has been curetted for endometritis. Menstrual type, every three weeks and rather profuse. I was requested to see her on account of colicky abdominal pains. The only abnormality in the menstrual history which could be elicited, consisted in the last period having been less than usual. On examination, the uterus was found movable and not enlarged. The right tube, on rectal examination, was found enlarged and congested. Being able by exclusion to rule out other cause of the colicky pains, I suggested exploratory vaginal section for diagnosis and found free blood in the pelvic cavity. Immediate abdominal section enabled me to remove the right ruptured tube lined with chorionic villi as also the vermiform appendix which was adherent to the tube. The woman recovered.

Case 2. A woman of low intelligence entered my service at the Columbus Hospital for curettage for metrorrhagia of a number of months duration. Absolutely no further history could be secured. The uterus was not enlarged nor did she complain of pain. During the curettage the uterus was perforated and the abdomen was opened to sew up the rent. An unruptured tubal gestation of about eight weeks development was found. The woman recovered.

Case 3. A young woman, married a number of years and sterile, had been curetted for endometritis, and at this time the left ovary was determined enlarged, sensitive and prolapsed. She passes a menstrual period by one month and has repeated attacks of abdominal pain. I

was requested to see her and found what simulated the left enlarged ovary prolapsed behind the uterus. The uterus was not enlarged. Examination under anesthesia was requested. In conjunction with two colleagues, the decision was reached that ectopic gestation did not exist. The attacks of pain were so suggestive, however, that exploratory vaginal section was resorted to. This measure revealed blood free in the pelvis, and immediate abdominal section enabled the operator to remove the ruptured right tube and to cleanse the peritoneal cavity of many old clots. The woman recovered.

Case 4. A woman, over thirty years of age, married a number of years and sterile. No history of previous pelvic disease. Always irregular in menstrual periods and of uncertain duration as regards type. Had not menstruated for three months when, after a late supper, she had an attack of abdominal pain followed by diarrhea. This yielded to remedies administered by her family physician. A few nights thereafter she began to spot and deemed her menstrual period imminent. The next day she had an attack of sharp abdominal pain and the same evening I saw her. Neither by rectum nor by vagina could I determine any abnormality, but then the woman was excessively stout. I suggested her removal to a hospital, for observation, and kept her there for eight days without the development of further symptom beyond slight bleeding from the vagina which was deemed menstrual. Suddenly she had a further attack of abdominal pain and she was examined under anesthesia with two of my colleagues. The consensus of opinion was that ectopic gestation did not exist. Nevertheless, I made an exploration through the posterior fornix of the vagina and obtained free blood and many clots. Abdominal section enabled me to remove the right ruptured tube which was reported upon as being an ectopic gestation of about ten weeks development. The woman recovered and about five months thereafter I was requested by the same family physician to see her, late one night, since she had again developed similar symptoms. For many reasons the lady and her husband were satisfied that pregnancy could not exist, but an examination by rectum revealed the left tube enlarged and congested, and, the pains being distinctively colicky, I had her transferred to the same hospital and the next morning opened the abdomen and removed the left ruptured tube which the same pathologist reported upon as being an ectopic pregnancy of about six weeks development. The woman recovered.

I would state here, in passing, that this is the second case of repeated ectopic gestation which my series records.

Case 5. A young woman of twenty-two years, unmarried, was

brought to my office for an opinion as to the continuance of hemorrhage from the uterus notwithstanding curettage for fungous endometritis performed three weeks previously by a colleague whose name was not given me. She gave a history of absolute menstrual regularity, of a profuse type, and she stated that as she intended shortly to marry she had acquiesced in a curettage in order to enter the new life in a condition of health. She had had no abdominal pain nor had she, so far as I could elicit, had any of the subjective symptoms of pregnancy. The crucial question of all I was unable to put to her. On examination I found a movable mass presenting in the right vaginal fornix. This mass was very congested. I ordered her to the hospital and the next day opened the abdomen and removed an unruptured tubal pregnancy the size of the average fist. The woman recovered.

Case 6. This woman was the wife of a physician and she had been curetted a year previously for endometritis by a colleague of great repute. I was requested to see her on account of persistent metrorrhagia of four weeks duration associated with sharp abdominal pain. I determined a mass posterior to the uterus which I took to be an enlarged tube and I made a tentative diagnosis of ectopic pregnancy. I suggested a posterior section for diagnosis but was requested to wait until the gentleman who had curetted her a year previously could see her. Within a week I met this gentleman who told me that the woman simply had a salpingo-oöphoritis which had existed at the time of the curettage. Meantime the woman had passed a mass which looked very much like decidua but this did not shake the opinion of my consultant. I retired from the case only to be requested, after one week, to see the woman again in order to acquiesce in the electrical treatment of what it was now conceded was an ectopic pregnancy. My appointments were of such a nature that I could not respond, but I emphatically condemned any further delay to test the virtues of electricity. I afterwards heard that, after considerable discussion amongst three consultants, the woman's abdomen was opened and a ruptured pregnant tube was removed. She recovered.

Case 7. This case was seen at the Columbus Hospital and the following history was secured: A woman aged twenty-seven years, married and has had one child. Menstrual history regular as to type and of three days duration. Last period ten days before entering my service and has been flowing ever since. For the past month has complained of transient attacks of abdominal pain. On examination I found the uterus adherent and retroflexed, and enlarged soft masses on both sides. Temperature and pulse were normal and abdominal distention did not

exist. The abdomen was opened and the right tube was found in the process of aborting, there having been extruded sufficient blood to float under the parietal peritoneum. Both appendages were removed—the left tube being a pyosalpinx adherent to the cirrhotic ovary. The woman recovered.

Case 8. This case entered my service at the Columbus Hospital and was operated upon one week after the previous case. Her history was: Age twenty-two years, married five months, menstruation always regular and painless. She menstruated three times normally after marriage. Her last period was abnormal in that its duration was less by one day than customary. Within the week prior to entrance she had an attack of sharp pain in the lower part of the abdomen and began to flow moderately.

On examination the uterus was found moderately enlarged, and the left tube enlarged and congested. On opening the abdomen the following day, clots and blood were found in the pelvic cavity and the left ruptured tube was removed. The woman recovered.

I might quote many other cases from my records but I believe that these have proven the position which I assumed in my opening remarks.

Scores of women have died in the past from unrecognized ectopic gestation and many die to-day because of the hesitating line of action adopted by far too many men who have been taught the classic history of the affection and pin their faith to this teaching. Since the cob-webs have been brushed from my eyes I have acquired the courage of my convictions and in each and every suspicious case I advise and practice the means—and a safe one—of reaching a diagnosis and this means is the posterior vaginal section.

116 West 76th St.

THE EARLY DIAGNOSIS AND CONSERVATIVE TREATMENT OF FIBROMYOMATOUS TUMORS OF THE UTERUS.*

BY LEORA G. BOWERS, M.D.,
Richmond, Ind.

My reasons for presenting a paper on this subject are not that I have anything especially new to proclaim, but to emphasize some parts of this field of work which it seems to me have been neglected to some extent in previous essays advocating surgical treatment. I refer especially to the early symptoms and diagnosis and to some phases of treatment.

As a rule the general practitioner has the case in charge first. It depends many times on his diagnostic acumen for an early diagnosis, and this determines, in a large per cent. of the cases, the nature of the treatment or the remedial measures to be pursued.

We admit that in a large number of instances these tumors exist for years without any symptoms calling for treatment, and are found accidentally while examining for other supposed conditions. But a considerable number of patients have more or less pronounced symptoms from the first, and it is to this class of cases that I especially refer.

In reviewing the recent literature of uterine fibroids, I find but little attention paid to the symptomatology and diagnosis, in fact nearly everything connected with the subject is an embodiment of the operative views and criticisms of the authors, these contributions giving us little information that will enable us to prevent the more radical operation of hysterectomy.

It is easy for any one to make a diagnosis when a polypus appears at the external os or when the uterus becomes so large as to fill the pelvis, but what is the condition of the patient then? She may be bloodless and very probably has been an invalid for months or years.

The early symptoms of these growths are sometimes obscure; consisting of a little increased hemorrhage, and pain at menstrual epoch. Later the hemorrhage lasts longer and the interval shortens between periods. The patient now becomes easily exhausted and anemic. Again the physician is called to treat a case of sterility for which no dis-

*Read before the 28th Annual Meeting of the Mississippi Valley Medical Association, Kansas City, Mo., October 15-17, 1902.

coverable cause appears on superficial examination, or to treat repeated miscarriages without knowing what occasions them.

The writer nearly lost a case of twin miscarriage in a primipara from hemorrhage due to a polypus. A severe post partum hemorrhage occurred one hour after delivery, which was discovered and stopped when the woman was nearly exsanguinated. She seemed to have recovered nicely and had been up for several days. On the twenty-first day I was called hurriedly to see her and found she had bled profusely from the uterus and was lying nearly pulseless on the bed. I applied restoratives and packed the uterus temporarily with gauze; later I dilated the cervix and removed a pear-shaped polypus about two inches long, which presented an opening at the fundus large enough to introduce my little finger. This was the cause of the miscarriage and hemorrhage.

Sometimes a supposed case of sciatica is treated uselessly for months, when a careful examination would reveal the real condition to be due to pressure by a fibroid.

The unguarded physician may attribute some of the above symptoms to "cold" or to an early miscarriage, when, many times, they are due to these growths.

The writer insists that when a woman has had unusual hemorrhage for a few menstrual periods without apparent cause, it is our duty to prepare her for curettage; she can be thoroughly examined while under an anesthetic; and then, if a polypus exist, it can be removed and the uterine cavity curetted and packed with gauze.

The patient's bowels should first be emptied by an enema. Catch the lower lip of the cervix with a volcella and have an assistant pull downward, place the left hand over the abdomen and introduce the index finger of the right hand into the rectum. In this way you may detect tumors high up on the uterus while they are yet very small.

The relations of the growths to the cervix or body of the uterus may best be determined by examination through the vagina.

As I have already indicated in the beginning of this paper, I will speak of some of the phases of treatment.

Early in these cases I believe the animal extracts deserve a trial, especially the thyroid extracts.

Many other drugs have been used seemingly with success at first, but later have been abandoned.

Besides ergot, whose use is well known, hydrastin has given me the best results; I prescribe it to be taken three times a day. It must be given for some time to reduce the menstrual flow materially.

The galvanic current may relieve the pain and hemorrhage in some cases. It should be applied once each week for two or three months.

Curettement should be the first surgical treatment to be considered. When performed early it saves the patient long periods of wasting with the attendant loss of strength, and while the patient is under an anesthetic, as before stated, we may make a more thorough examination. While, on the other hand, if curettement is left until later, relatively speaking, besides this loss of vitality which the patient suffers, the pathologic changes in the uterine cavity may be such that there is danger in such a surgical procedure.

The indications for myomectomy, given by most surgeons, are severe hemorrhage, pregnancy as a complication, pressure, twisting of pedicle, degeneration of the growths; sometimes it is justified for the purpose of relieving mental distress.

It seems to me, in this day of good surgical technic, when the highest ideal of surgery is restoration to normal, and not extirpation, that we are justified in early operation before severe hemorrhage and other urgent symptoms exist, especially in a patient below thirty-five years of age, for the following reasons :

First. It may save her a future Cesarean section.

Second. It may save her from a more radical operation and greater mutilation.

Third. The operation can be done when the resistance of the patient is at the best, and the mortality thereby is lessened.

Fourth. There will be no danger from degenerative changes.

Fifth. If excision is delayed until tumors become large, there may be a rupture of the uterus, should pregnancy occur.

Sixth. It is a great mental relief to the patient.

Seventh. It is performed before there is any degenerative change in the blood vessels, which sometimes is a result of this condition. This latter, in my opinion, should be given no little consideration. I have in mind a death that occurred recently on the table, which I believe was the result of these vascular changes.

Eighth. When operated on early we can usually save the uterus and therefore the patient from much mental distress.

I never had this last indication for conservative surgery brought so forcibly to my mind as recently. And as it impressed me so strongly in favor of conservative surgery I will recite briefly the incident.

I performed an operation on a prominent lady of our city who was very solicitous at first that her friends should not know of her condition. After her arrival at the hospital she requested the matron, as a special

favor, not to let any one know what was done to her. About ten days after the operation she again requested the matron to tell every one who asked her the exact nature of her operation that they might know she had not lost her uterus.

Myomectomy should be the operation of election in all cases where there is a reasonable ground for success.

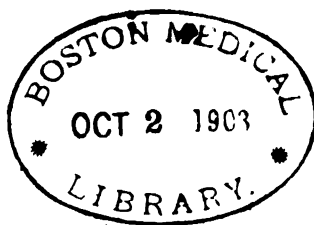
As to the vaginal or abdominal route, I think the choice depends on the individual operator, his habit and training. He will choose that which promises the best results with the least mortality. But I believe the abdominal route affords certain advantages over the vaginal. The surgeon is brought in direct touch with the diseased organ, he can enucleate the tumors with less injury to the uterus, and he will be in position to examine and remove appendages if necessary.

The next operation of election should be hysteromyomectomy. By this method we preserve the length of the vagina, we do not open up this avenue of peritoneal infection, and one can say to the patient, "it was not necessary to remove *all* of the uterus."

The one possible objection to this procedure is that carcinoma may develop in the amputation scar.

In conclusion, let us again urge that more be written on early symptoms and a diagnosis for the special benefit of the busy general practitioner.

I hope that in the future, with earlier diagnoses and with improved technic, we may have in selected cases more restorative and fewer mutilating operations.



SPECIAL ARTICLE.

A CRITICAL REVIEW OF THE DISCUSSION ON HYSTERECTOMY FOR PUERPERAL SEPSIS AT THE FOURTH INTERNATIONAL CONGRESS OF OBSTETRICS AND GYNECOLOGY IN ROME, SEPTEMBER, 1902.

BY HIRAM N. VINEBERG, M.D.,

Adjunct Gynecologist to Mt. Sinai Hospital; Attending Gynecologist to St. Mark's Hospital, etc., New York City.

The question of hysterectomy for puerperal sepsis is of such paramount interest that it was selected as one of the three subjects for discussion at the recent meeting of the International Congress of Gynecologists and Obstetricians at Rome.

H. Fehling (Strassburg) opened the discussion in a carefully worded paper (*Monatsch, für Geb. u. Gyn.*, Bd. XVI. Ergänzungsheft). He deemed the only practical division, as yet, was that given by Duncan, into sapremia and septicemia. The question of auto-infection was only very lightly touched by him and leaves us in doubt as to his own opinion on that vexed point.

He drew a parallel between sapremia or intoxication and diphtheria. As in the latter only the toxins of the bacteria enter the circulation, so in sapremia the toxins of the bacteria of putrefaction pass into the general circulation while the bacteria themselves penetrate only the superficial strata of the necrotic mucosa or, more strictly speaking, the decidua.

He admitted, however, that this form may develop into a general infection, but according to him, it does so very rarely and only under very unfavorable circumstances. In general infection or septicemia, the pathological germs enter the circulation either through the lymph or blood vessels. The resulting disease from its mildest to its severest forms offers a very various clinical picture. The differential diagnosis between sapremia and septicemia he considers as presenting no especial difficulties, an opinion which did not receive general consent. A. Pinard (Paris) especially took issue with Fehling in reference to his classification of sapremia and septicemia, and very strongly emphasized that

at the present time we possess no certain clinical or bacteriological distinctions between them. This is a point, to my mind, which cannot be too strongly urged upon the general profession. In fact, Fehling's own dicta, which we will quote directly in italics, bear out this contention. The practitioner should be taught to look upon every puerperal case showing fever, with the greatest concern. It is only in this way that we can hope to avert serious sepsis by appropriate treatment at the outset of the infection.

We shall now quote Fehling's own words:

"The attempt to divide the various forms of puerperal infection bacteriologically cannot be considered thus far as successful. This much is certain, that in numerous cases which have run a normal course streptococci and staphylococci have been found in the uterine cavity, and further, in the severe forms of infection sometimes streptococci, sometimes staphylococci, at other times bacteria coli communis and other bacteria, or mixtures of these, are found, thus demonstrating that the attempt to make a ready and positive diagnosis from a bacteriological examination has thus far been a failure."

Not one note of protest was uttered against these assertions, though many prominent bacteriologists (among them Krönig) were present. Here, in this country, I have been practically the only person who has been promulgating such doctrines. It was only recently that at a meeting of the New York Obstetrical Society, a prominent member asserted that the treatment of puerperal sepsis depended upon whether streptococci were found in the uterine discharges or not, and that it is a fatal procedure to curette the uterus when they are found. He evidently forgot that Bumm's first investigations and his description of a "protective zone," were made upon the tissues obtained by curettage, and that in several of the cases he found streptococci, and nevertheless the patients recovered.

Fehling said that although there is an unanimity of opinion as to the general treatment, the views differ considerably as to the value of local treatment such as intra-uterine irrigation, curettage, etc., and while Marmorek's serum has not created for itself a prominent place in the therapeutics of puerperal infection, he thinks the question of the value of Credé's collargol is not as yet a closed chapter.

In this connection Hofbauer (Vienna) spoke of the excellent results they had obtained in Schauta's clinic with nuclein. In a series of 12 cases there were 11 recoveries. He attributed the beneficial effects of nuclein to its close affinity to the bone marrow, the seat of the origin of the immune bodies.

When all these means fail, as they not infrequently did, Fehling said nothing is more natural than the wish on the part of the thoughtful physician to rid the organism of the cause of the septic infection, which is overwhelming it with septic material, and thus originated the attempt to cure puerperal sepsis by extirpation of the uterus. The question then arose, Is it possible by removing the affected uterus to save the organism after it has undergone general infection? The analogy was drawn by many between the course pursued by the surgeon in amputating a deeply infected extremity when it gives rise to general sepsis. The analogy, he thought does not hold, for in the infected extremity the local process may be limited to the affected extremity. But in puerperal sepsis there is no such limitation. He did not concur with the more recent views that most of the severe cases of sepsis originate in the body of the uterus. In support of this contention he cited the statistics obtained in the Strassburg Clinic where examinations of septic cases disclosed the fact that 68 per cent of them originated from the placental site. This is a distinction which, I must frankly confess, is not quite clear to me. I was under the impression that when a sepsis arises from the placental site it is considered as being of uterine origin.

Fehling tried to make the point also that puerperal sepsis differs from other sepsis in that the pathogenic germs possess a higher degree of invasive power, and readily bring about degeneration of the vital organs, such as the heart, kidneys and liver. This, I think, must be considered as purely hypothetical. Degeneration of these organs doubtless frequently occurs in puerperal sepsis, as it does in other forms of sepsis when they are allowed to run their course without any attempt to remove the original source of the infection. It will readily be seen from the foregoing that Fehling is not an advocate of hysterectomy for puerperal sepsis. He thought it was significant that the procedure found more favor with surgeons (especially in America) than with the leading obstetricians in Germany who were in charge of the large Maternities. We shall soon see, however, that at least one leading obstetrician (Leopold) in Germany did not take quite so pessimistic a view of the subject. Still, this much Fehling would concede, that if one could definitely set the indications, the operation would be justifiable in a small percentage of cases of puerperal sepsis. At the present time he would limit it to those cases of uterine origin due to retained putrid placenta which could not be removed by the ordinary methods. He did not consider the results obtained by Trendelenburg, Freund and Bumm, in ligating the thrombotic pelvic veins, as encouraging.

Nearly everyone who participated in the discussion took the same ground as Fehling as to the inherent difficulties of formulating the indications. It is the same attitude that I have taken all along, but the difficulties of a subject should not deter us from pursuing it in a thoughtful and conservative manner.

G. Leopold (Dresden) who followed with a thoughtful paper, took a broader and more liberal view of the subject. He divided the cases of severe puerperal sepsis into the following groups:

First Group. Cases in which the pyogenic germs have penetrated the uterus and set up a general peritonitis. Hysterectomy in these cases, would be useless, for the major infection would now be located in the peritoneum. He believes these cases should not be allowed to die without an attempt to treat the peritonitis surgically. He thinks the results obtained by Winckel and others in the surgical treatment of puerperal peritonitis show us that it is not so hopeless a condition as many think. But the important point is to select the right time. If the germs have already penetrated the diaphragm and affected the thoracic organs, surgical treatment will usually be too late. The proper time to intervene in general peritonitis, according to Leopold, is on the third or fourth day if the pulse shows no tendency to decrease in rapidity, and if the general signs of sepsis show no abatement.

Second Group. Cases in which the pyogenic germs attack particularly the venous system and lead to a septic thrombosis. In these cases, the lymph vessels and the peritoneum are slightly or not at all affected. The removal of the uterus as the chief source of the infection, will be sufficient in some cases. In others again, the affected veins should also be removed if the patient's condition warrants it. In one of his cases in which he removed the uterus the autopsy showed that the central veins were also affected, thus demonstrating that his indication was a false one. He spoke of Trendelenburg's procedure in warm terms.

Third Group. Cases in which the infection principally affects the endometrium and extends and becomes localized in one or other adnexa. The patient has high fever with severe constitutional symptoms; the uterus is very tender and at one side one can feel an inflammatory mass. This mass is the center of a localized peritonitis, which may become general and lead to death. He was able to save two cases by promptly removing the affected tube and ovary. In one of my early cases (See *Medical News*, March 25, 1899), just such a condition as the foregoing obtained, and on opening the abdomen I found the affected tube and ovary in a state of beginning gangrene. By ablating

the diseased tube and ovary, the woman's life was saved. She has since given birth to a child at full term and has been in perfect health. I feel confident that anyone who had seen that tube and ovary at the time of removal would not have disputed the assertion that their timely removal was the means of preventing the development of a general peritonitis and consequent fatal termination.

Fourth Group. Cases in which all the symptoms point to multiple abscesses of the uterine muscularis and pelvic peritonitis. He recalled two cases in which the tenderness and flaccid condition of the uterus with evidence of pus collection in Douglas' space, seemed to warrant the extirpation of the uterus, but, after opening the abdomen, all the pus foci in the uterus and in Douglas' space were searched for and evacuated and drained, and the patients made a slow but satisfactory recovery. I have had two such cases myself; both patients recovered on following a similar line of procedure. But in a third case (See Case IV, *American Journal of the Medical Sciences*, Feb., 1900) the uterus only was involved, and it was thickly studded with small abscesses varying in size from a split pea to an almond. Nothing less than extirpation of the whole uterus would have been of any avail. This was accordingly done, and the patient recovered after a stormy convalescence during which she had a septic pneumonia gradually creeping over both lungs. In that instance the uterus was not tender on pressure. On the contrary, it was simply flaccid and doughy, and the patient lay in a state of apathy, with severe rigors repeated two or three times in twenty-four hours, the temperature rising to 106° and plus, and a pulse of 160.

Fifth Group. Comprises cases in which, during labor, severe bruising is inflicted upon pelvic tumors, causing gangrene of the tissues with the subsequent onset of a puerperal peritonitis, or its full development. To this group belong cases with myoma of the uterus or irreplaceable ovarian tumors or growths in the pelvic walls, as carcinoma which, during labor, for instance, on the application of forceps, are subjected to such traumatism as to induce gangrene. It is not necessary, however, in these cases always to remove the uterus. He cited an instructive case in his experience, where a cancerous growth existed between the uterus and rectum. In order to deliver the fetus the tumor had to be pushed to one side and forceps applied to the fetal head. On the third day symptoms of general peritonitis began to appear. He at once opened the abdomen, found the peritoneum highly injected as was also the serous covering of the uterus. In Douglas' space a large purulent focus was found. This was drained through

an incision into the vagina. Then the uterine surface and the intestines were irrigated with sterile salt solution. The fundus uteri was now sutured to all surrounding structures, so as to close off the pus cavity from the general peritoneum. The patient made a rapid and satisfactory recovery.

Sixth Group. Cases in which putrefaction of the uterus occurs in consequence of retained placenta which in no wise can be removed *per vaginam*. He quoted Schultze's classical case in illustration. I deem it quite proper to include in this group cases in which only portions of the placenta become so adherent that they cannot be removed either manually or with the curette. My first case presented just such a condition. I had thoroughly curetted the uterus, still when I subsequently removed the uterus there was found a large fragment of placental tissue, the surface of which was in a state of putrefaction and so firmly adherent to the uterine wall that it could not be peeled or scraped away with the greatest force. In that case there was profound sepsis, as evidenced by the pulse, temperature and general condition of the patient. Both broad ligaments were found edematous and infiltrated, and had the operation been delayed a few days no doubt the inflammatory process would have extended, setting up a general peritonitis. I am aware that many who saw the specimen at a distance made the criticism that the placental residue could have been removed with the fingers or the curette. But even granting this, the case was highly instructive and of value in many ways.

1st. It demonstrated that considerable placental residue may be present without the existence of hemorrhage or fetid lochia.

2d. That the presence of placental residue in the upper part of the body or fundus (this was situated in the left cornu) does not interfere with the involution of the lower uterine segment. The cervical tissue was very firm and the cervix would not admit the introduction of the index finger.

3d. That even after the infection has extended to both broad ligaments, the life of the woman may be saved by extirpating the uterus, together with as much as possible of the involved ligaments.

A lively discussion followed the reading of the papers by Fehling and Leopold. H. Treub (Amsterdam) took a negative position and expressed the opinion that hysterectomy for puerperal sepsis is rarely indicated. His conclusions were as follows: The usual methods of treatment (curettage, intra-uterine irrigations, ice bags, cold baths, turpentine injections, antistreptococci serum, alcohol) for puerperal sepsis localized in the uterus are in most cases followed by cure. In a

few exceptional cases hysterectomy will be indicated, but not until one had made a thorough clinical examination and weighed carefully the *pros* and *cons* of the operation.

Tuffier (Paris) said he was the first to bring the subject on the *tapis* in France, through a successful case in the year 1899. From a more extended personal experience and a careful study of the literature he has reached the following attitude at the present time. It cannot be controverted that from a pathologico-anatomical standpoint puerperal infection does produce, though seldom, a diseased condition which calls for a hysterectomy. There are no pathognomic symptoms, however, from a clinical standpoint by which we can form the indication; the whole clinical picture must be our guide. In a given case of septicemia, *post partum* or *post abortum*, when there is no cause for the fever to be found either in the external genitals or other organs, when the usual methods of treatment (intra-uterine irrigation, curettage, serum, etc.,) are of no avail and when the peritoneum and adnexa are intact and the uterus is large, flabby and is discharging fetid lochia, and if the patient's general condition warrants it, total extirpation of the uterus should be done, whether there be placental retention, a sloughing myoma or the so-called "metritis dissecans." The difficult question to decide is when to operate. "To operate too early would be criminal, to operate too late would be useless." In reference to the route, in very early cases he would prefer the abdominal, and in sub-acute cases the vaginal route; for shortly after parturition the tissues are so vascular and flabby that the control of hemorrhage is not so easy when operating *per vaginam*.

W. A. Freund (Berlin) adhered to his former attitude in reference to hysterectomy for puerperal sepsis. He would limit it to, (1) Cases with total or partial placental retention which resisted all efforts at removal by the natural route. (2) Cases of abortion of criminal origin, or when the treatment had not been aseptic, and metritis with pyemic symptoms developed. In these cases the affected broad ligament and spermatic veins should also be excised. In a later period of puerperal sepsis, whether it be of lymphangitic or pyemic origin, total extirpation is not to be done.

W. J. Sinclair (Manchester) stated that when he obtained no results with serum therapy he tried hysterectomy, also without any very encouraging results. In one apparently hopeless case the patient recovered after the operation; still, four others ended fatally. The difficulty, in his opinion, lies in the selection of the proper time. The

operation must be done so promptly at times that the time is too short for a bacteriologic examination.

J. L. Faure (Paris) spoke chiefly on the question of technic. He considered it dangerous to remove a uterus infiltrated with streptococci through the abdominal route, and said he was an unconditional adherent of the vaginal route, through which route he had operated on 13 cases. He meets the objection usually raised against the vaginal route by using peculiarly constructed traction forceps which do not tear the tissues. He performs a vaginal hysterectomy in puerperal sepsis usually in 8 minutes; in one case he did it in 3 minutes.

Zweifel (Leipzig) did not agree with Leopold as to the encouraging results to be obtained in opening the abdomen for peritonitis of puerperal septic origin. He himself had operated upon 2 cases of diffuse peritonitis, and as both recovered, he was in doubt whether they were cases of streptococcic peritonitis; they may have been gonorrheal peritonitis. He thought Trendelenburg's results in excising the thrombotic spermatic veins as worthy of further trial. He would prefer to operate intra-peritoneally, so that the veins on both sides may be inspected, and instead of mere ligation he would be in favor of also excising the thrombotic veins.

A. Pinard (Paris) drew attention to the circumstance that there were two groups of speakers, the obstetricians who were against the operation, the gynecologists who were in favor of it. He himself recognized only the following indications: retained putrid placental remains, sloughing myoma and perforation of the uterus.

It is both gratifying and encouraging to me to find that the consensus of opinion coincided in the essential features with the views that I have promulgated in my various articles upon the subject of the surgical treatment of acute puerperal sepsis.

Leopold in his article took a position almost exactly similar to the one which I have maintained all along, and I feel confident it is the one which will constantly gain adherents, based as it is upon sound surgical principles.

751 Madison Ave.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL
AND GYNECOLOGICAL SOCIETY.

Meeting, December 5, 1902.

The *President*, DR. G. WYTHE COOK, in the Chair.

SMALL OVARIAN DERMOID CYST.

DR. J. TABER JOHNSON presented this specimen which, before operation, was diagnosed as appendicitis. The ovary was enlarged and less than double its normal size, and was non-adherent though the pain was excessive. The appendix was apparently normal and was not removed.

RUPTURED TUBAL PREGNANCY.

DR. I. S. STONE presented a specimen of ruptured tubal pregnancy that had been removed. A pus tube on the opposite side and an accumulation of pus between the bladder and ureter were incised and drained through the abdominal incision. In dealing with the pus collection between the uterus and bladder, he tore a large hole in that viscus although great precaution against such accident had been taken. The wound was sutured with running catgut in the mucosa and another layer outside of it, the line of suturing healing without trouble. The patient was highly septic and some days later developed double pneumonia, which he feared would terminate fatally.

DOUBLE OVARIAN ABSCESS AND DOUBLE PYOSALPINX.

DR. J. WESLEY BOVÉE presented this specimen which he had removed from a young woman. One ovary contained about five ounces of pus and the other about two ounces. Each tube contained about one ounce of pus. He said in his experience the cases of this precise kind had been very rare—probably not five per cent. of his pelvic pus cases.

PRURITUS VULVAE AND ALLIED CONDITIONS.

DR. E. A. BALLOCH read a paper with this title. After a resumé of the pathology of the affection, the history was given of a case of

kraurosis which began at the menopause as pruritus and terminated in epithelioma of the right vulva. Excision of the affected parts was done in September, 1902, with apparently a perfectly satisfactory result, there having been, so far, no return of the kraurosis nor of the epithelioma. He recommended excision in cases of pruritus which resist the ordinary remedies.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting, December 19, 1902.

LARGE OVARIAN FIBROMA.

DR. I. S. STONE presented a specimen with a case history as follows:

Mrs. McG., aged 54, 1-para, married 16 years, was admitted into Columbia Hospital, Oct. 21, 1902. She had been in poor health for several years, was very anemic and was in such poor condition as to require two weeks preparatory treatment before operation was advised. She had normal menstruation until her menopause nine years since.

Her first knowledge of the tumor was one year before, when her family physician discovered its presence and suggested operation for its removal. The tumor appeared to be of uterine origin, was freely movable and was evidently pedunculated. It was about the size of a uterus at fourth month, was hard and gave us no room to doubt its character and attachments. Diagnosis,—Pedunculated uterine fibromyomata.

At the operation, the growth proved to be of ovarian origin, and was easily removed. In addition to the ovarian growth, a deeply seated broad ligament cyst was found on the same side and required a very tedious operation for its removal.

The patient slowly recovered from operation and is now at her home, gradually regaining her health.

BILATERAL OVARIAN FIBROIDS.

DR. STONE also presented another specimen, the history of which was as follows:

Miss C., aged 32, was admitted to Columbia Hospital, Dec. 16, 1902, had been suffering greatly from menorrhagia and dysmenorrhea for five years. For last eighteen months had had almost constant bloody uter-

ine discharge. She had been curetted by her family physician without benefit. She was very anemic and had lost greatly in weight although her heart was in good condition and her complexion clear and not suggestive of serious organic disease of any kind. She had pain in both iliac fossas and was anxious for heroic treatment. Both ovaries were large (size of a lemon) and prolapsed, although not exquisitely tender to touch. They appeared to be merely greatly enlarged cystic ovaries, and operation was commenced with the intention of excising the cysts and of suspending the remaining portion of healthy ovary, tying one or both uterine arteries and then curetting the uterus. When the ovaries were examined and their real condition discovered, we decided to remove them, and we present them now for the inspection of the members of the society.

The patient is making a very satisfactory recovery.

DR. BOVÉE said these specimens were unusually interesting. He was satisfied that, in his work, ovarian fibroid had occurred in no more than $\frac{1}{10}$ of 1 per cent. of the cases that had come to operation, and that double-sided ovarian fibroids were exceedingly rare indeed, he having had but one case. It was believed that ascites was not so frequently an accompaniment of smooth ovarian fibroid as of those with roughened surfaces which irritate the peritoneum. Uterine fibroids are covered with well-defined peritoneum thus presenting a smooth surface to the general peritoneal surfaces, while ovarian fibroids are not so covered. Dr. Kelly suggested that ovarian fibroids produced ascites because of their marked mobility incident to long pedicles. Whether malignant growths of the ovary produce ascites by their roughened surfaces is undecided. A lively interest in these growths, since the reading of Peterson's paper before the last meeting of the American Gynecological Society, is evidenced by the amount of discussion of the subject in various obstetrical societies throughout the country.

A PLEA FOR THE BETTER AFTER CARE OF WOMEN DURING THE PUERPERIUM.

DR. W. M. SPRIGG read a paper with this title, in which he advised three vaginal examinations after delivery; the first, immediately after to discover the presence or extent of injuries; the second, shortly before the patient is allowed out of bed; and the third, six weeks after delivery. He also recommended immediate repair of all lacerations of the genital tract, including those of the cervix and unexposed submucosal of the vagina and perineum.

DR. E. E. MORSE deprecated the frequent references to sterilization

of the vulva and the frequent examinations made during labor. He also objected to the immediate repair of cervical lacerations.

DR. I. S. STONE believed that the statement that the obstetrician could prevent minor gynecological work so far as it relates to results of labor and abortion, is incorrect and misleading. He further said that he was inclined to look upon the responsibility of the obstetrician as being very heavy.

DR. J. T. KELLEY opposed meddlesome obstetrics, but said he had frequently employed the forceps with conservative results as to lacerations. He disapproved of primary trachelorrhaphy.

DR. W. S. BOWEN favored primary trachelorrhaphy, and to prevent perineal lacerations he frequently resorted to bilateral episiotomy—placing sutures before delivery and tying them after.

DR. ELMER SOTHORON advised extreme conservatism, regarding examinations during labor, the use of forceps and in after treatment.

DR. J. WESLEY BOVÉE thought perineal lacerations should ordinarily be closed in severe cases for a restoration of function, and in all cases in which raw surfaces were exposed, to prevent such surfaces from becoming avenues of infection. He was always fearful of the infectious material about the vulva, perineum and anus and therefore hesitated in using primary surgical treatment of lacerations in the upper part of the birth canal. He did not believe primary trachelorrhaphy was advisable, as a rule, because of the danger of infection and the distortion and discoloration of the cervix for a considerable time after delivery. He believed postural treatment to prevent retroversion should be practiced after the third day following labor.

BOOK REVIEWS.

THE DISEASES OF INFANCY AND CHILDHOOD. By L. Emmett Holt, A.M., M.D. Second edition, revised and enlarged. New York: D. Appleton & Co., 1902.

This work has been carefully revised and in a measure rewritten. Perhaps, more than any other portion, the chapters on milk and infant feeding have been enlarged and altered. The subject matter has been considerably rearranged. Milk bacteriology, the care of cows and stables, the proper handling and transportation of milk, etc.—subjects that have received much attention of late and have been to a great degree so admirably systematized—are discussed at length. For the home modification of milk the writer has added and apparently gives the preference to a system that depends upon the use of top milk instead of percentage creams—an improvement, it seems to us, in economy and simplicity. By most, the latter element has been too little regarded. Many of the systems promulgated have demanded a knowledge of algebra and the binominal theorem, cube root and a little bit of spherical trigonometry on the side, not possessed by the average denizen of tenements (nor sometimes by their physicians), and appear to have been evolved rather as an “Open, Sesame” for their authors to the ranks of pediatricists than as practical methods of feeding real or imaginary infants. These remarks do not apply to the present work. Most explicit directions are given for the various steps in milk modification and a number of illustrative weight charts are added. In fact, the thoroughness and detail in which the whole subject of artificial feeding has been covered is remarkable and leaves little of practical value, within the limits of our present knowledge, to be learned from any other source.

The chapter upon therapeutics in infancy and childhood is admirable in that it gives systematically much information which in the ordinary book one has either to hunt for or to infer. Among many excellent chapters we note especially those upon pneumonia and diseases of the respiratory tract, and upon diseases of the gastrointestinal tract; also upon infectious diseases, particularly diphtheria, in the treatment of which last, in accordance with recent ideas, much larger doses of antitoxin are recommended than formerly.

While, therefore, important changes have been made in this second

INDEX OF CURRENT LITERATURE.

J. WESLEY BOVÉE, M. D.,

CHARLES S. WHITE, M.D.

Key to periodicals to which reference is made by numbers.

1. Alabama Medical Journal. Birmingham.
2. Albany Medical Annals.
3. American Journal of the Medical Sciences. Philadelphia.
4. American Journal of Obstetrics. New York.
5. American Medical Compend. Toledo, O.
6. American Medicine. Philadelphia.
7. American Practitioner and News. Louisville.
8. American Surgery and Gynecology. St. Louis.
9. Annales de Chirurgie et d'Obstétrique. Paris.
10. Annales de Gynécologie et d'Orthopédie. Paris.
11. Annals of Gynecology and Pediatrics. Boston.
12. Annals of Surgery. Philadelphia.
13. Archi für Gynakologie. Berlin.
14. Archiv für Klinische Chirurgie. Berlin.
15. Archives de Neurologie. Paris.
16. Archives Provinciales de Chirurgie. Paris.
17. Archivio di Ostetricia e Ginecologia. Napoli.
18. Archivos de Ginecología, Ostetricia y Pediatría. Barcelona.
19. Atlanta Journal Record of Medicine.
20. Australasian Medical Gazette. Sydney.
21. Beiträge zur Geburtshilfe und Gynäkologie. Leipzig.
22. Beiträge zur Klinischen Chirurgie. Tübingen.
23. Berliner Klinische Wochenschrift.
24. Boston Medical and Surgical Journal.
25. Botkin's Gazette. St. Petersburg.
26. Brazil Medical. Rio De Janeiro.
27. Boston Medical-Chirurgical Journal.
28. British Gynecological Journal. London.
29. British Medical Journal. London.
30. Black and White Medical Journal.
31. British Medical Journal.
32. Bulletin de l'Académie de Médecine. Paris.
33. Bulletin of the American Academy of Medicine. Easton, Pa.
34. Bulletin of the Johns Hopkins Hospital. Baltimore.
35. Bulletin de la Société Royale de Gynécologie et d'Obstétrique. Bruxelles.
36. Bulletin de la Société de Chirurgie de Lyon.
37. Bulletin de la Société de Obstétrique. Paris.
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 42. Canadian Journal of Medicine and Surgery. Toronto.
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 45. Centralblatt für Chirurgie. Leipzig.
 46. Centralblatt für Innere Medicin. Leipzig.
 47. Centralblatt für Gynækologie. Leipzig.
 48. Chicago Medical Recorder.
 49. Charlotte Medical Journal.
 50. Cincinnati Lancet-Clinic.
 51. Cleveland Medical Journal.
 52. La Clinica Chirurgica. Milano.
 53. La Clinica Ostetrica. Roma.
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 55. Clinical Review. Chicago.
 56. Colorado Medical Journal. Denver.
 57. Columbus Medical Journal.
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 59. Correspondenz-Blatt für Schweizer Ärzte. Basle.
 60. Denver Medical Times.
 61. Deutsche Medicinische Wochenschrift. Leipzig.
 62. Deutsche Zeitschrift für Chirurgie. Leipzig.
 63. Dominion Medical Monthly. Toronto.
 64. Dublin Journal of the Medical Sciences.
 65. Edinburgh Medical Journal.
 66. L'Egypte Medicale. Alexandria.
 67. Fort Wayne Medical Journal-Magazine.
 68. Der Frauenarzt. Leipzig.
 69. Gazette de Gynecologie. Paris.
 70. Gazette Hebdomadaire des Sciences Médicales de Bordeaux.
 71. Gazette des Hôpitaux de Paris.
 72. Gazette Degli Ospedali e delle Cliniche. Milano.
 73. Georgia Journal of Medicine and Surgery. Savannah.
 74. Giornale Internazionale delle Scienze Mediche. Napoli.
 75. Glasgow Medical Journal.
 76. La Gynécologie. Paris.
 77. Hospitalstidende. Copenhagen. Kobenhavn.
 78. Hot Springs Medical Journal.
 79. Illinois Medical Journal. Springfield.
 80. Indian Lancet. Calcutta.
 81. Indian Medical Gazette. Calcutta.
 82. Indiana Medical Journal. Indianapolis.
 83. Intercolonial Medical Journal of Australasia. Melbourne.
 84. International Journal of Surgery. New York.
 85. International Medical Magazine. New York.

86. Interstate Medical Journal. St. Louis.
87. Iowa Medical Journal. Des Moines.
88. Journal d'Accouchements. Liege.
89. Journal of the American Medical Association. Chicago.
90. Journal de Medicine de Paris.
91. Journal of Nervous and Mental Diseases. New York.
92. Journal of Obstetrics and Gynecology of the British Empire. London.
93. Journal des Sages-Femmes. Bordeaux.
94. Kansas City Medical Index-Lancet.
95. Klinisch-Therapeutische Wochenschrift. Wien.
96. The Lancet. London.
97. Louisville Monthly Journal of Medicine and Surgery.
98. Lyon Medical.
99. Maryland Medical Journal. Baltimore.
100. Medical Age. Detroit.
101. Medical Bulletin. Philadelphia.
102. Medical Chronicle. Manchester.
103. Medical Examiner and Practitioner. New York.
104. Medical Fortnightly. St. Louis.
105. Medical Mirror. St. Louis.
106. Medical News. New York.
107. Medical Press and Circular. London.
108. Medical Record. New York.
109. Medical Review of Reviews. New York.
110. Medical Standard. Chicago.
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112. Medical Times. New York.
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126. Old Dominion Journal. Richmond.
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145. Revue de Medecine. Paris.
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149. Riforma Medica. Roma.
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151. St. Louis Courier of Medicine.
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156. Semaine Gynecologie. Paris.
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- Yoder, A. C.—Description of an Osteoplastic Metastatic Carcinoma of the Sternum, Following a Primary Carcinoma of the Uterus. 106. Dec. 6.
- Zagorjanski.—Ueber das primäre Chorio-epitheliom ausserhalb des Bereiches der Eiansiedelung. 13. Band 67. Heft 2.

ABSTRACTS.

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ABDOMINAL SURGERY.

Observations on the Sensibility within the Abdominal Cavity.

K. G. LENNANDER (*Mitteilungen aus den Grenzgebieten der Medizin und Chirurgie*, 1902, p. 39), has made extensive studies, during operations, as to the sensibility of the peritoneum and the abdominal organs. From his own observations and from reports in literature he draws the conclusion that only the parietal peritoneum is sensitive and that the serous coverings of the abdominal viscera and all those organs that are exclusively innervated by the sympathetic nerve are without sensibility. None of these organs can be a source of pain unless it is adherent to the parietal peritoneum or an inflammatory process originating in the same has progressed to the parietal peritoneum. Identical observations were made by the author regarding the female internal genitalia. During an abdominal hysterectomy for cancer of the uterus, he found that no pain was produced when the uterine fundus, the left ovary and the left tube were quite extensively burned with the thermocautery. When, in the course of the extirpation, the left broad ligament was stretched to be cut, the pull on the parietal peritoneum produced severe pain. The author reminds us of the fact that Veit has performed "with great success" Cesarean section without narcosis. This is an additional proof that the uterus is devoid of sensibility.

Encouraged by his experience, the author, in patients in whom a prolonged chloroform or ether anesthesia seems to be too dangerous, prefers the combined use of hypodermatic injections of morphine, Schleich's infiltration anesthesia and a short general narcosis with ether or chloroform. The latter is administered while the parietal peritoneum is cut and the intestines are brought into convenient position for certain operations, *e.g.*, for a resection. As soon as further manipulations with the parietal peritoneum can be avoided, the general narcosis is interrupted. Removal of gauze compresses from within

the abdominal cavity and reunion of the parietal peritoneum require induction of a short general narcosis at the end of the operation. The freezing method may be substituted for Schleich's infiltration anesthesia. G. G.

A Contribution to Disinfection of the Hands.

DR. H. FÜTH (*Centralblatt für Gynäkologie*, Sept. 27, 1902) reports the results obtained from experiments on disinfections of the hands after infection with the microbes of tetragenus. The hands of the students were infected with tetragenus microbes and, after a thorough washing and scrubbing, for five minutes, of the infected hands with the official soap spirits according to the method of v. Mikulicz, cultures were taken and the fluid injected into the peritoneal cavity of guinea pigs, causing death in 6 to 14 days from tetragenus infection. The infected hands of other students were disinfected by washing in hot water for ten minutes, using a sterile brush and soft soap. The temperature of the water was 45 to 50° C., and the water was once changed as was also the brush.

After rinsing off the soap, the hands were chemically disinfected for five minutes, in a 3-per-cent. solution of citrethylediamin of mercury (sublimine), when the hands were again soaked in hot water.

The injection into guinea pigs of the culture obtained from the mercury cleansed hands failed to produce a tetragenus infection. A. S.

Prophylaxis of Collapse.

DR. FREUDENBERG (*Der Frauenarzt*, Aug. 15, 1902) says it is advisable not to wait until the necessity for infusion presents itself, but to resort to subcutaneous saline infusion as a prophylactic measure, to guard against the occurrence of collapse. This procedure should especially hold good in instances, when in private practice assistants are limited. H. J. B.

A New Apparatus for Hypodermic and Intravenous Injections.

DR. LUDWIG ADOLF OLIVA (*Centralblatt für Gynäkologie*, 1902, No. 43) describes an apparatus which should prove very useful for subcutaneous and intravenous injections when a considerable quantity of fluid is to be injected. It consists of two rubber tubes, one within the other. The inner tube, which serves for the transmission of the fluid to be

injected, is connected by its lower end to a modified hollow trocar and canula. The outer tube transmits the heated fluid whose sole object is to keep the solution in the inner tube at a desired temperature.

A. S.

Telangiectasis of the Bladder.

A. BERLINER (*Deutsche Zeitschr. f. Chirurgie*, Band 64, Heft 5 and 6, p. 517). Profuse hemorrhages from the bladder caused by pathologic changes of the vesical mucous membrane are not frequently subjected to operative treatment. To this group belong the hemorrhoids and the telangiectatic anigomas of the bladder. With regard to the latter disease, Berliner points out that these angiomas consist of distended capillaries or radicals of veins; the connective tissue proliferates but little nor is there any new formation of vessels. They are frequently found in the epidermis but rarely observed in mucous membranes. Only three reports of telangiectatic tumors of the vesical mucous membrane exist in literature. Berliner adds a fourth case of this kind which, in contradistinction to these former observations, ended with recovery. A girl of 11 had suffered since her fourth year from hematuria, the intensity of which had increased with the last weeks to such a degree that the anemia of the patient became alarming. Since her early childhood, a pronounced asymmetry of her face was noticeable. On examination, a telangiectatic angioma of the size of a walnut was found at the right major labium. The urine contained much blood, showed alkaline reaction and a moderate increase of leucocytes, but did not present any tumor particles. Cystoscopic examination revealed, dispersed over the mucous membrane, a number of circumscribed ridges or round elevations varying in size, and bluish-red in color; between these the mucous membrane of the bladder was suffused with blood. Application of stypticin and douches being ineffective, *sectio alta* was resorted to. The telangiectatic areas were thermocauterized and the bladder was drained by a strip of iodoform gauze through the abdominal wall for some time. Cystitis occurred which was treated by silver nitrate instillations and, finally, complete recovery obtained.

This case is the first on record in which the correct diagnosis was made and proper treatment applied. The diagnosis was rendered easier by the simultaneous existence of an angioma at the labium. Furthermore, the assumption of a congenital benign disease of the bladder was corroborated by the deformity of the facial bones. Hypertrophy of the face concomitant with angiomas have frequently been observed.

There is no doubt that, without the interference, a slow death from hemorrhage would have ensued.

Berliner sums up: Intermittent hemorrhages from the bladder or bloody discoloration of the urine in juvenile persons in whom the microscopic examination of the urine permits the exclusion of the suspicion of a malignant tumor, must direct our attention to vesical telangiectases. In such cases, the moderately good physical condition stands in some contradistinction to the cachexia regularly observed in ulcerating tumors of the bladder. If, in addition to this, inspection of the surface of the body reveals the presence of angiomas, the diagnosis of telangiectases of the bladder is made certain. G. G.

Some Complications Arising Subsequently to Celiotomy.

JESSETT (*Jour. of Obs. & Gyn. of the British Empire*, Vol. 2, No. 5), reviews some of the causes of trouble after celiotomy where the comfort and perhaps the life of the patient is endangered.

The commonest are adhesions from mild sepsis, undue handling of the intestines, improper burying of stumps, leaving clots of blood in the cavity, and failure to bring down the great omentum under the abdominal wound.

In several cases he was obliged to reopen the abdomen for the relief of pain and to relieve an intestinal obstruction caused by these adhesions, one case being opened no less than five times.

An ovary in another case was adherent to the line of union on the pelvic floor, causing pain and reflex nervous symptoms.

Dragging down of the intestines causing slight kinking and sometimes acute flexion of the bowel follows as a result of adhesions.

Another cause of serious trouble is the kinking of a ureter or possible inclusion in a ligature after hysterectomy. In one case where the patient passed no urine in twenty-four hours, the abdomen was reopened and the ligatures found quite free from the ureter but the tissue was so dragged that the ureter was kinked. To avoid risk of such an accident he advises separating the anterior and posterior flaps of peritoneum, then feeling the vessels and ligating them, without including other tissues. He never cuts the vessels before catching the bleeding points, as too much blood is lost and on account of the vessels' retraction are sometimes very difficult to catch.

The dangers of the appendix being attached to the mass or becoming adherent to the stumps after operation are mentioned and three cases reported.

He uses catgut for all suturing of the peritoneum, using fine silk only for ligating the ovarian and uterine arteries. He closes the parietal peritoneum with continuous suture of catgut then places about three to six interrupted sutures of specially prepared catgut through the fascia and muscle, about one inch apart; next he brings together the fascia with a continuous suture of catgut; and finally applies a subcuticular of fine silk or horsehair.

He gives 5 grains of calomel the night of the day after operation and a soap and water enema on the morning following. He thinks the importance of this cannot be overestimated as it tends to overcome the intestinal paresis following operation where there has been much handling of the intestines.

The last complication he mentions is ventral hernia which he thinks is obviated by the above described method of closing the abdominal wound.

W. E. B.

GYNECOLOGY.

Vaginal Extirpation of Uterus for Carcinoma, in the Sixth Month of Pregnancy.

DR. E. SCHROEDER (*Centralblatt für Gynäkologie*, No. 40) reports a case of carcinoma of the cervix in which he performed a vaginal extirpation in the sixth month of pregnancy. The patient was 30 years of age and a multipara. After a thorough disinfection of the field of operation the carcinomatous growth was thoroughly cauterized with the Paquelin cautery, and the disinfection renewed. Schuchardt's deep incision was made, hemostatic ligatures controlling the hemorrhage. The portio was freed by circular incision extending well into the healthy tissue. Blunt separation of the bladder from uterus followed, when the peritoneal cavity was opened both anteriorly and posteriorly. Next the base of each broad ligament, first the right and then the left was ligated and divided. An incision now made into the anterior wall of the cervix and uterus exposing the uterine contents which were removed. Two more ligatures upon each side completed the ligation. The uterus was now extirpated. No hemorrhage occurring the peritoneal cavity was closed by interrupted sutures, the lateral sutures including the stumps of the broad ligaments. Schuchardt's incision was closed by continuous catgut sutures. Time of operation 47 minutes. Should it be desired to obtain a living fetus no ligatures should be applied to the broad ligaments until after the delivery of the fetus.

A. S.

Bilateral Ligation of the Hypogastric and Ovarian Arteries as a Palliative Treatment for Uterine Cancer.

PROF. KRÖNIG (*Centralblatt für Gynäkologie*, 1902, No. 41) mentions three cases of absolutely inoperable uterine cancer in which the ligation of both ovarian hypogastric arteries was followed by exceedingly gratifying results. The operation is a slight one and can be performed rapidly with the loss of very little blood, while a fairly robust patient can leave her bed at the end of eight days. The hypogastric artery is best ligated at the point where it leaves the common iliac and preferably with silk, while the ovarian artery is tied as it enters the broad ligament. Lately, he also ligates the arteries of the round ligaments, thus preventing a collateral circulation by means of the internal spermatic artery with the external iliac. The abdominal opening can be made very small. Pfannenstiel's transverse facial incision between the navel and symphysis is applicable. The fascia should be united by means of silk sutures to enable the patient to leave her bed on the 8th or 9th day. These ligations should be done in all cases of uterine cancer when, subsequent to the opening of the abdomen, it is decided that the case is inoperable by hysterectomy.

A. S.

Sarcoma of the Ovary.

A. STAUDER (*Zeitschr. f. Geb. u. Gyn.*, Band 47, Heft c). In the gynecological university clinic of Wuerzburg, 295 ovariectomies were performed from 1889 to 1901 inclusive. Of these, 20 cases were operated upon for sarcoma and endothelioma of the ovary, i.e., about 7 per cent. Of these 20 patients four were not yet 20 years of age; three of the latter presented round cell sarcomas. Primary bilateral sarcoma of the ovary is rare. Involvement of both ovaries rather indicates metastasis of the new growth. Only the round cell sarcomata show a tendency to bilateral development; they must also be considered to be the most malignant representatives of the disease with regard to the early and frequent occurrences of metastases. The only mode of treatment is oöphorectomy. Primary mortality of the operation is about 13 per cent. Final cure, according to Pfannenstiel, is 50 per cent. Of the 20 patients of Stauder, 13 are still living; one of them has now been well 4 years, while the majority of the other cases has been operated upon but recently. Compared with carcinoma, the final results of operation for ovarian sarcoma are favorable. This may be explained

(1) By the relatively high percentage of unilateral sarcoma which has but little tendency toward metastasis,

(2) By the fact that most of the sarcomata which are not too far advanced are free of adhesions and permit a radical operation.

In unilateral sarcoma, the author advises the extirpation also of the other apparently normal ovary if the patient be past 40 years of age. In younger patients the normal ovary may be left behind provided the patient remains under constant control and submits to another operation so soon as involvement of the second ovary seems manifest.

G. G.

Hemoglobinuria Subsequent to Ruptured Tubal Pregnancy.

TAUBER read a paper on this subject at a meeting of the society of German physicians in Prague (*Wiener Klin., Wochenschr.*, 1902, No. 38). The patient, 35 years of age, had had one labor seven years before. Six weeks after the last menstruation, patient was suddenly taken sick with all symptoms of a copious internal hemorrhage which was considered to be due to a tubal abortion or a ruptured tubal pregnancy. No operation was performed. Patient rallied under expectant treatment, but, three days afterward, suffered another severe attack which was accompanied with fever. During this attack and the following two days she voided a dark red urine which, chemically, yielded a very distinct blood reaction. Microscopically, there were but very few red blood corpuscles, but no bladder epithelia could be detected. The scant amount of erythrocytes was in surprising contradiction to the chemical reaction of the urine. Tauber, therefore, diagnosed hemoglobinuria. After excluding all other possible etiologic factors, such as nephritis, paroxysmal hemoglobinuria and perforation of a hematocele into the bladder, he surmises that, in this case, the hemoglobinuria was caused by the presence of autolysines which, on account of the quick resorption and the large quantity of the extravasated blood, could not be counterbalanced by the organism by production of anti-autolysines. A similar observation has lately been reported by L. Michaelis.

G. G.

The Surgical Treatment of Uterine Carcinoma.

O. V. FRANQUÈ (*Centralbl. für Gynäkologie*, 1902, No. 47), says that at the recent International Congress, the supravaginal amputation of Schroeder as a treatment of uterine cancer was not even mentioned and only once during the discussion was it lightly alluded to with the

remark that it certainly could not be expected to produce a permanent cure. Franqu  disagrees since he can cite several cases in which the Schroeder and Hofmeier operations were performed and no recurrence has taken place in six years.

He has performed total extirpation upon a portio cancrroid, when a subsequent microscopic examination proved the operation unnecessary. The same might be said of carcinoma. Oftentimes in beginning cancer of the cervix, the body of the uterus and the abdominal glands are not involved and many a total extirpation is performed with fatal termination when a supravaginal amputation would have sufficed with perhaps a happy termination.

The cylindrical epithelial cysts of the abdominal glands which are regarded as metastatic carcinoma by Wertheim, Ries, W lfing, Franqu  and others, have not been proven absolutely to be metastatic or to have any connection with the original carcinoma. Especial attention is directed, in those cases of chorioepithelioma malignum in which the abdominal glands usually become affected very late, if at all, and in which the patient seeks medical aid only when almost exhausted, to the fact that the prognosis in vaginal hysterectomy is much more favorable than in a radical abdominal operation. A. S.

On the Origin of the Cysts of the Uterine Appendages and their Accessory Bodies and of the Adenomyomata of the Lateral Parts of the Fallopian Tubes.

G. SCHICKELE (*Virchow's Archiv*, Band 169, Heft 1, p. 44 and Heft 2, p. 183). The very elaborate investigations of Schickele deal with the question of the origin of those cysts which are found either in groups upon the broad ligaments and the tubes or singly within the broad ligaments. The cysts of the first variety do not exceed, as a rule, the size of a cherry; those of the second class often reach the size of a child's head or even larger. The genesis of these formations is still subject to widely differing controversies. This highly interesting article cannot be abstracted in detail, but should be studied in the original. Here, only a short synopsis can be given. Remnants of the Wolffian body are most often found to form the origin of the cysts in question and may, under pathologic conditions, develop into certain tumors (epoophorocysts, adenomyomata) which in their characteristic arrangement frequently reproduce the structure of their mother organ. These cysts must be distinguished from those that originate from the proliferated germinative epithelium of the ovaries, and from those that originate from

deformities of the tubes (diverticula). A separate position is held by cysts upon the fimbriated ends of the tubes. These cysts must be explained by abnormal supernumerary foldings-in of the celom epithelium.

G. G.

OBSTETRICS.

Internal Diseases as Indications for Artificial Interruption of Pregnancy.

F. SCHAUTA (*Monatsschrift f. Geb. u. Gyn.*, Oct., 1902), gives the following indications and contraindications which are based upon his observations drawn from 40,000 cases in his clinic.

In severe forms of polyneuritis gravidarum, induction of premature labor or of abortion is justified for the sake of the mother. Only in the most critical cases of chorea may interruption of pregnancy during the last two months be undertaken. In moderately severe cases, the pregnancy should be interrupted during the first eight months, not later; because parturition generally exercises a deleterious influence upon the mother. Very severe cases of tetany necessitate artificial termination of the pregnancy for the sake of the mother. In cerebral tumors, if the mother is doomed, premature birth must be induced in the interest of the child, as soon as unconsciousness of the mother obtains. If the prognosis be doubtful, parturition should not be accelerated because it endangers the mother's life. In hemiplegias, interruption of pregnancy is indicated only during agony in order to save the child. Psychoses do not constitute an indication unless the patients are emaciated or prone to commit suicide. Affections of the spinal cord and epilepsy do not call for artificial interruption, nor does hysteria which the rather will grow worse by interference.

Diseases of the eye with the exception of retinitis albuminurica produced by nephritis, and affections of the ear generally offer no indications for interference.

As to diseases of the skin, affections such as pityriasis versicolor, pruritus, eczema, pemphigus and, especially, herpes gestationis may, during pregnancy, produce the most violent symptoms and may be cured or improved by induction of premature labor.

Among the diseases of the respiratory system, pneumonia and pleuritis contraindicate interference; in these cases, the fetal life must be sacrificed to the life of the mother. In severe cases of phthisis, the mother is not saved by premature labor, but will be benefited by ar-

tificial abortion performed during the first months of pregnancy; this is the case especially in tuberculosis of the larynx. In milder cases, however, when the tuberculosis is gaining ground, interference is indicated also in the last months in the interest of both mother and child. A living and healthy child, however, will but seldom be obtained by artificial premature birth. In miliary tuberculosis, premature labor must be induced so soon as the child is viable. In pneumothorax, bronchitis, empyema and asthma, interference is contraindicated.

With respect to diseases of the heart, it must be noted that only about one-seventh of all cases of cardiac lesions are recognized during pregnancy. Spontaneous interruption takes place in 20.2 per cent. The fetal mortality is 25.5 per cent. Under appropriate treatment, the great majority (95 per cent) survives the exertions of normal parturition. Cardiac lesions, when complicated by tuberculosis or chronic nephritis, give a very unfavorable prognosis. Mitral stenosis seems to be more dangerous than the other cardiac lesions. Only in the rarest cases is the heart disease unfavorably influenced by the existing pregnancy while parturition in itself is much more dangerous to the heart. In a completely compensated vitium cordis, interruption is only indicated when the life of the patient has been seriously endangered by the cardiac lesion during a previous pregnancy. In mitral stenoses, pregnancy must be terminated so soon as the slightest failure in compensation occurs. In uncompensated vitia, interference must take place at once when the period during which improvement could be obtained by internal medication promises to be too long. Otherwise, internal treatment should first be resorted to, and only after established improvement must the pregnancy be interrupted. Complications with chronic nephritis and tuberculosis require immediate interference.

In regard to disorders of the digestive tract, ptyalism necessitates induction of premature labor if adequate treatment of an existing genital abnormality fail to check the depraved condition of nutrition of the patient. Appendicitis should be operated upon irrespective of an existing pregnancy so soon as there is formation of pus suspected. Operation for appendicitis is indicated also in serious catarrhal forms of the disease. Induction of premature birth can only be recommended in catarrhal not in purulent appendicitis. In the presence of severe symptoms of icterus gravis such as high fever, petechias, atrophy of the liver and, especially, of nervous symptoms of hepatic origin, pregnancy must be interrupted at once. Hepatic tumors which produce marked cachexia indicate premature birth in the interest of the mother. In severe biliary colics, cholecystectomy must be performed: interruption

of pregnancy is contraindicated. In peritonitis, induction of premature labor is, under no circumstances, justifiable. The prognosis of hyperemesis is much more favorable than is generally accepted. Interference with the pregnancy is indicated but very seldom and then only after all other modes of treatment have failed.

Among diseases of the urinary organs, albuminuria and nephritis, when not favorably influenced by proper diet, indicate interruption of pregnancy in the interest of the mother. In chronic nephritis, interference is indicated so soon as the child is viable, or when serious general symptoms occur. The fact of nephritis or eclampsia having been present during a previous pregnancy does not necessarily indicate interruption. In eclampsia of milder forms, interference should be resorted to only after a trial with morphine and milk have failed. Retinitis and amaurosis require immediate interference. Hematuria and hemoglobinuria call for the same treatment and give the same indications as does nephritis. Pyelonephritis is first to be treated internally; in case of failure, labor should be induced in the 32d week.

Diseases of the Blood: In splenic leukemia and pernicious anemia, parturition accelerates the fatal issue. Interruption of pregnancy during the last months may be taken into consideration in the interest of the fetus. Otherwise, in the diseases mentioned, as well as in purpura and Werlhof's disease, artificial abortion is justified. Exophthalmic goiter requires interruption in the presence of very serious symptoms and metrorrhagias.

Among diseases of metabolism, diabetes justifies artificial abortion; or if the amount of sugar be not excessive, premature birth. In osteomalacia, interruption of pregnancy is always indicated. In most cases, induction of premature labor will be the operation of choice to be followed by resection of the tubes or ablation of the ovaries. In highly contracted osteomalacic pelvis, Cesarean section must be performed together with resection of the tubes, extirpation of the ovaries or removal of the uterus. In severe symptoms of osteomalacia at the beginning of pregnancy, hysterectomy should be performed during the first month.

Most of the infectious diseases contraindicate interruption of pregnancy, generally on account of the danger of septic infection during the puerperium. In certain diseases of this group such as influenza, malaria, recurrens, pertussis and parotitis, the indication to induce premature birth is not given by the diseases proper but by certain complications arising during their progress.

Toxic conditions from morphine, mercury, lead, nicotin and chronic

alcoholism do not require interference. Phosphorus poisoning may sometimes necessitate tamponade of the uterus, on account of copious metrorrhagias, and thus indirectly produce interruption.

In surgical diseases such as myomas, cysts and dermoids, artificial abortion is useless. In operable carcinoma uteri, total extirpation is always indicated irrespective of an existing pregnancy. In inoperable cancers, Cesarean section is preferable to premature labor in the interest of the fetal life. In operable malignant tumors of abdominal organs other than the genitals, interruption must be performed if the operation would, technically, hinder the operation or if the recovery would be impaired by parturition. In struma, strumectomy should be done while interruption of the pregnancy is contraindicated. Hypertrophy of the mamma, during pregnancy, may, in rare cases, form an indication for interference. G. G.

Indications for Artificial Interruption of Pregnancy.

Transactions of the Fourth Internat. Periodical Congress of Gynecologists and Obstetricians, Rome, Sept. 14, 15, 16, 1902 (*Centralblatt für Gynäkologie*, 1902, No. 41.) M. Hofmeier (Würzburg) would make a careful distinction between a chronic nephritis which had existed before pregnancy began, and a nephritis which had developed during pregnancy. In chronic nephritis pregnancy should be interrupted in the mother's interest only when, after proper treatment, the disease does not improve. In the so-called pregnancy kidney the same treatment should be followed. In acute nephritis interruption of pregnancy is not indicated.

E. Pinard (Paris) divides the indications for induced abortion into two groups: (1) Diseases conditional upon pregnancy; (2) Diseases aggravated during pregnancy.

To the first group belong uterine hemorrhages when the pulse registers over 100, hydramnios, molar pregnancy, toxemias of pregnancy as persistent vomiting, albuminuria, eclampsia, toxic nephritis. To the second group belong diseases of the circulatory system, as heart diseases, diseases of the respiratory organs, pulmonary tuberculosis, nephritis and pyelonephritis when the total quantity of urine passed in 24 hours is less than 800-1000 gr.

F. Schauta (Vienna) gives as indications for the interruption of pregnancy, severe polyneuritis of pregnancy, severe chorea, tetanus, suicidal mania, severe cases of epilepsy, laryngeal tuberculosis, pulmonary tuberculosis of rapid progression, mitral stenosis as soon as insuf-

ficiency begins, severe ptyalisim, catarrhal appendicitis, nephritis, when in spite of milk diet no improvement occurs, eclampsia, diabetes, marked pelvic contraction. Contra indications are diseases of the spinal cord, hysteria, pneumonia, pleurisy, pulmonary tuberculosis of slow progression, pneumothorax, bronchitis, emphysema, asthma, suppurating appendicitis, peritonitis, typhus, erysipelas and infectious diseases generally, rheumatism, myoma, dermoid cysts, and cancer of uterus. In operable cases extirpation should be performed without regard to pregnancy. In inoperable cases, as soon as the child is viable, Cesarean section is indicated instead of interruption.

A. R. Simpson (Edinburgh) divides the indications into two main groups: (1) Those pertaining to the fetus; (2) Those pertaining to the mother. To the first group belong habitual death of the fetus toward the end of pregnancy, and the over development of the fetus relatively to the size of the pelvis. To the second group belong diseases which had existed prior to the occurrence of pregnancy and intercurrent diseases. Among these diseases may be mentioned, insanity, apoplexy, epilepsy, chorea, meningitis. In heart diseases the conditions must be carefully considered. In cancer of the uterus it is usually better to wait until toward the end of pregnancy.

L. M. Bossi (Genoa) has proven by experiments that pregnant animals possess a greater degree of susceptibility to infectious diseases than nonpregnant ones, and that this susceptibility increases with the progress of pregnancy. Abortions were common, and the injected microorganism could be detected in a majority of the cases in placenta and in the fetal blood. Experiments with Mosso's ergograph respecting the power of the muscles during menses, pregnancy, birth and during the puerperium showed that the muscle power sinks during the premenstrual epoch, while during the menstrual period it gradually rises; during pregnancy it frequently shows an important weakening of the muscle power, while in the puerperium a rapid and well marked rise is noticed. In the induction of artificial abortion the dangers of operative interference must be carefully weighed and he recommends that the safest, most rapid and with least tendency to infection is dilatation by means of his dilator.

A. S.

The Relative Weights of the Right and Left Side of the Body in the Fetus.

T. G. MOORHEAD (*Journal of Anatomy and Physiology*, London, July, 1902). In the fetus after the fifth month, there is a marked pre-

ponderance in weight of the right side over the left. The cause of this difference in weight has not yet been explained with certainty. Numerous investigators have endeavored to decide whether there is any difference in weight of the corresponding limbs and the right and left sides in the new-born child and in the fetus, but, as yet, no definite agreement exists among them. From the literature and from observations of his own, Moorhead concludes that no real difference exists in this respect. Furthermore, the relative weights of the thoracic and abdominal viscera on either side of the mesial plane of the body in the fetus might have importance in connection with the subject in hand. Many weighings and careful observations have yielded Moorhead the following general result: From at least the fifth month of fetal life onward, the center of gravity of the body is placed to the right side of the mesial plane, the thoracic and abdominal viscera on this side represents 52.6 per cent. of the total weight of the viscera, as compared with 47.4 per cent on the left side. The child, therefore, enters upon its extra-uterine existence with a marked right-sided bias.

This point is of some importance from an obstetric point of view, as possibly being a determining factor in the different varieties of vertex presentation.

G. G.

Histology and Obliteration of the Umbilical Vessels and Ductus Botalli.

B. PFEIFER (*Virchow's Archiv*, Vol. 167, 1902, p. 210). The examinations were made upon 3 new-born and on 27 children ranging in age from 2 days to 7 months. The use of the elastic tissue stains enabled the author to demonstrate the presence of numerous elastic fibers in the various muscular layers of both the umbilical vessels and the ductus Botalli in contradistinction to former observations which denied the existence of elastic tissue. In the ductus Botalli, there is in the arrangement of the elastic fibers no difference from other arteries of the same size. In the umbilical arteries, the ordinary wavy *elastica interna* is replaced by elastic fibers of irregular direction and of varying number and thickness. Also in the median layer of the wall of these vessels the elastic tissue shows more irregular structure than in other arteries of medium size; while in the latter, circular layers of smooth muscle fibers alternate with circularly arranged elastic fibers, this regular arrangement is not equally distinct in the umbilical arteries. The umbilical vein possesses numerous elastic fibers, especially in its median layer, but no internal elastic membrane can be seen.

The modes of obliteration in these vessels differ materially. In the

umbilical vein, the cells of the intima and the connective tissue of the wall proliferate, capillaries penetrating from the adventitia into the obliterated part. In the umbilical arteries, this process is combined with a growth of the elastic tissue. In the ductus Botalli, the obliteration is almost exclusively effected by an enormous increase of elastic tissue. After the completion of the proliferating process, the umbilical vein is a cord of connective tissue and the ductus Botalli one of elastic tissue. In the umbilical arteries, traces of muscle, an elastic layer and a mass of connective tissue which fills the lumen, can be distinguished. This microscopic picture changes near the umbilicus where the obliterated arteries are completely replaced by a mass of connective tissues with numerous blood vessels and scant elastic fibers. Pfeifer agrees with Baumgarten that this tissue is produced by the (physiologic) demarcation around the umbilicus which alters the dense adventitious and peri-adventitious connective tissue into a soft granulation tissue. G. G.

The Question of the Prophylaxis of Ophthalmoblenorrhoea Neonatorum with a Consideration of the Results of Instillation of Acetate of Silver.

E. SCIPIADES (*Sammlung Klinischer Vorträge, No. 430*) mentions as the possible causes producing ophthalmia in the newborn the microbes of gonococcus, Loeffler's bacillus diphtheritica, micrococcus, pneumococcus, coli bacillus, diplobacillus, staphylococcus pyogenes albus and aureus, pseudoinfluenza bacillus.

A specific which will destroy all of these microbes is not likely to be found in a single medicament like nitrate of silver. Credé's prophylactic measure of a 2-per-cent. solution of nitrate of silver, according to statistics, reduces the mobility of ophthalmia to a minimum, but the detrimental influence produced by the violent reaction of the silver, following even the first application, has been the means of raising a just objection. This has resulted in endeavors to supplant nitrate of silver by other less objectionable medicaments as weaker solutions of silver nitrate, 1 per cent. or less, protargol in 10-per-cent. to 15-per-cent. solution, silver acetate 1-per-cent. to 2-per-cent. solution, lemon juice, salicylic acid, sulphocarbolate of zinc, permanganate of potassium, resorcin, thymol, boric acid, formalin and other antiseptic agents.

A medicament which can be employed as a prophylactic without any objectionable feature, to prevent the purulent inflammation of the eyes in infants has not been discovered. Of all the agents acetate of silver promises the best results. It should be used in a 1-per-cent. to 2-per-

cent. solution and followed by douching with salt solution. This it is claimed, is attended with absolutely no reaction. A. S.

The Growth of the Placenta.

DR. F. HITSCHMANN and DR. O. TH. LINDENTHAL (*Centralblatt für Gynäkologie*, 1902, No. 44) give the results of their exhaustive investigations relating to placental development and growth. The impregnated ovum reaches the uterine cavity devoid of villi, and after it has abraded the epithelium and reached the mucosa it is enveloped by a particular kind of tissue of the trophoblast or ectoblast which is in direct communication with the maternal tissue. This greater or less thickened cell development surrounds the first tender elevations of the mesoblast which forms the future chorionic connective tissue, while from the trophoblast cellular prolongations penetrate in all directions the adjacent very vascular maternal tissue, and open up vessels. It is the trophoblast which possesses the power to open up vessels and to grow actively through the decidua. But since the life of the trophoblast is limited, by the time it has arrived at that stage of development at which it has penetrated the maternal tissue, the first elevations of the mesoblast have developed into more or less plainly discernible villi, which, however, are still covered with the trophoblastic material. Very soon absorption and atrophy of the inner portion of the trophoblast takes place and finally it extends over the central portions of the villi, only syncytium and cells of Langhans cover the stroma of the villi. About this time the outer portions of the trophoblast atrophy and the rapidly growing villi force themselves into its place. It is, therefore, the trophoblast which establishes the first communication between the maternal tissues and the ovum, and which prepares the way for the growth of the villi into the maternal structure; and since the power of penetration of the villi depends upon the existence of the trophoblast, so, with the atrophy, the further power of invading the maternal tissue is lost. The essential difference, functionally and morphologically, between the primary villi covered with trophoblast and the secondary villi, is that the latter are covered with a double layer of epithelium and no longer possess the power of penetrating the maternal tissue or of opening up vessels, while their function is mainly that of producing a greater surface for absorption. With the atrophy of the trophoblast, the definite foundation of the serotina is laid. The primary villi are of a certain unalterable number situated at fixed intervals from each other. As the ovum enlarges the chorial surface increases in circumference, the primary villi

becomes longer and broader; at the same time with the growth of the chorial surface the space between the villi becomes greater, but an actual increase in the number of villi does not occur. The uterus and the ovum enlarge with each month of pregnancy and correspondingly the serotina enlarges without, however, changing its relations to the decidua vera. A. S.

A Case of Complete Spontaneous Rupture of the Uterus.

F. KLEINERTZ (*Centralblatt für Gynäkologie*, No. 40) reports a case of this accident occurring within one half hour after labor pains had begun and almost simultaneously with the rupture of the membranes. Patient 39 years of age, VIII. para. First menstruation occurred between 19 and 20 years. All deliveries were easy and normal, the first one 12 years and the last 3 years ago. Patient has since, however, aborted twice at 3 months. Has had leucorrhea for 14 years but no other uterine trouble. The severe pain following immediately upon the rupture of the membranes did not last long, while subsequent pains were slight and at irregular intervals. A vaginal examination made 12 hours later disclosed a cervix dilated to the extent of two fingers. The finger passed up the cervical canal revealed a laceration of the anterior uterine wall at the internal os. Pelvis was normal in size. A laparotomy was performed 15 hours after the occurrence of the rupture. Upon opening the peritoneum the fetus was found in the abdominal cavity in the first occipital position. Inspection of the uterus showed a ragged tear beginning about the middle of the left border extending downward to the internal os from which point a second clean cut laceration extended transversely across the anterior wall of the uterus to its right border. The uterus was amputated, the stumps being covered with peritoneum. Convalescence was normal and uneventful. The cause of the rupture could not be ascertained, but it was probably due to weakened uterine muscles as a result of the eleven pregnancies and to the poorly nourished and generally debilitated condition of the patient. A. S.

New Investigations Regarding the Nature of Eclampsia and Views Respecting its Treatment.

DR. A. DIENST (*Sammlung Klinischer Vorträge*, No. 342) reviews briefly the promulgated theories of the causation of eclampsia. He says that in all of them no satisfactory specific explanation is given. Those authors come nearer to the truth who seek the cause not only

in the organs of the mother but in those of the fetus as well. Post-mortem examination of three fetuses made almost immediately after birth, from women with eclampsia, evinced evidences of chronic nephritis, parenchymatous inflammations of liver and heart, and universal thromboses.

Upon investigation it was found that the cause of the thromboses was an increase of the fibrin in the fetal blood and examination of the maternal blood revealed the same condition. The more fibrine the blood contained the more unfavorable was the prognosis.

The examination of the blood of the eclamptic mothers in all cases showed an intense hyperleucocytosis. The presumption that this hyperleucocytosis and the eclamptic poison is caused by albuminous matter is rendered still more probable by referring to its freezing point, which was found to be lower than normal. The fact that eclampsia occurs in new born infants, and in mothers usually toward the termination of pregnancy when the fetus produces more excrementitious matter than in its earlier career, and the fact that the death of the fetus *in utero* or its birth often causes a sudden cessation of the eclampsia seems to prove that the source of the poison must be sought in the fetus. As, however, infants are born in good health from mothers suffering from eclampsia, the reason for the augmented pathological collection of fetal albuminous matter in the mother's blood cannot be attributed to the increased importation of the fetal waste material from the maternal organism. Therefore it is the diminished eliminating power on the part of the mother, causing the retention and accumulation of fetal waste material in the maternal organism, that must be considered the primary cause of eclampsia. All conditions unfavorably influencing the activity of the secretory organs have a tendency to precipitate an attack of eclampsia. The diseases most commonly causing eclampsia are acute and chronic nephritis, heart disease, degeneration of the myocardium, and especially liver disease. The eclamptic spasm is a symptom caused by the specific poisons. All the varieties of eclampsia may be explained upon this theory. In eclampsia without albuminuria the same diminished elimination is the cause supplemented by cardiac insufficiency and inadequate liver activity. As regards the therapy two main indications present:

I. To relieve the depressed eliminating functions of the maternal organs by means of cardiac stimulants and diuretics.

II. To prevent if possible the importation of the eclamptic fetal poisons into the maternal blood by delivering as rapidly as possible. After this, the treatment should be directed to the removal of the poisons from the mother's blood. Since alkalies, such as sodium bicarbonate, assist oxidation, they should be given liberally by the mouth, using a stomach tube, when the patient is unable to swallow.

A. S.

AMERICAN GYNECOLOGY

VOL. II.

FEBRUARY, 1903.

No. 2.

STUDY OF THE CADAVER OF A WOMAN WHO DIED IN THE SIXTH MONTH OF PREGNANCY.

BY J. CLARENCE WEBSTER, M.D.,

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the University of Chicago.

The cadaver which forms the basis of this study was found in the dissecting room by my late colleague, Dr. R. Peterson, to whose kindness I am indebted for the opportunity of examining it. After freezing it I made a vertical mesial section, which I immediately sketched. The topographical relationships are now described.

The uterus as a whole has a pyriform shape, but the transverse diameter of the upper portion is relatively less wide than in later pregnancy. The organ lies mainly in the left half of the abdomen, its long axis being directed from below upwards and to the left. Its greatest width on the right side of the vertical mesial plane of the body is opposite the promontory of the sacrum, where it measures one and a half inches; on the left side the greatest width is four and a half inches opposite the lower part of the third lumbar vertebra. Its right side touches, from below upwards, the bladder, sigmoid flexure, cecum and small intestine. The left side touches the abdominal wall save at the upper end, where it is in contact with the small intestine. The highest point of the fundus is opposite the middle of the first lumbar vertebra. The uterine wall is moulded by surrounding structures.

The os externum is directed downward and forward and is on a level with a line joining the lower margin of the symphysis and the junction of the second and third sacral vertebrae. The os internum is opposite the upper part of the second sacral vertebra. The right border of the cervix lies nearly half an inch to the left of the middle line.

The fetus lies almost entirely to the left of the middle line of the abdomen. The attitude is one of marked flexion. The head is lowermost, the occiput being directed towards the left. The length of the fetal ovoid is seven and a half inches.

The highest level of the bladder is shown in the vertical mesial section. The upper surface is concave as a result of the pressure of the uterus. The greater portion of the viscus lies in the right half of the pelvis, where it extends nearly four inches to the right of the middle line. Its lowest portion is on the right side, below the level seen in the vertical mesial section.

The upper part of the vagina lies more in the left than in the right half of the pelvis.

The right round ligament starts from above the level of the middle of the third lumbar vertebra and passes downwards and outwards as a marked ridge for five and a half inches to a point opposite the lower margin of the first sacral vertebra, where it curves forward to the right internal abdominal ring.

The left round ligament runs downwards, inwards and slightly forwards; about half an inch above the brim it passes into the left internal abdominal ring.

The right ovary lies exactly vertical in position on the right side of the vertebral column, half an inch from the middle line, its upper (inner) end being opposite the lower margin of the fourth lumbar vertebra. It touches the sigmoid flexure which lies to the right of the middle line adjacent to the cecum. External to the ovary is the right Fallopian tube, measuring five inches in length and lying almost vertical.

The left ovary lies nearly vertical near the left iliac crest, three inches from the anterior superior iliac spine and opposite the lower part of the last lumbar vertebra.

Remarks.—The specimen is chiefly of interest in demonstrating the extent to which the pregnant uterus may be displaced by distension of the bladder. In the dissecting room, before the body had been cut, it was supposed that the pregnancy was much more advanced than the sixth month. The highest point in the fundus is opposite the first lumbar vertebra; at full time the average elevation is the junction of the first and second lumbar vertebrae. It is also interesting to note that the upper surface of the bladder is concave, owing to the pressure of the lower portion of the uterus above the cervix; in the non-pregnant condition, of course, there is no indentation of the bladder wall when the viscus is distended with urine.

Variations are found in the position of the uterus in pregnancy just as in the non-pregnant state. This may be congenital or acquired. Thus the uterus may be symmetrically placed, its long vertical axis being in the middle line of the body; this is more common in primiparas. Frequently the whole organ is placed nearer one side of the pelvis than the



Vertical mesial section of cadaver of woman who died in sixth month of pregnancy. Right half. *a*, symphysis pubis; *b*, first sacral vertebra; *c*, first lumbar vertebra; *d*, cavity of distended bladder, from which the urine has been removed; *e*, vagina; *f*, rectum; *g*, amniotic cavity; *h*, right broad ligament close to cervix; *i*, uterine wall; *j*, bladder wall. (Reduced.)

other. In many cases the long axis is oblique to that of the body. This is most marked where deviation is caused by old inflammatory conditions, tumors, distension of bladder or intestine. Of all the deviations found, that of the fundus towards the right is the most frequent; this is in correspondence with what is found in the non-pregnant state.

It is often stated that in the early weeks of pregnancy the uterus as a whole sinks down in the pelvis. That the enlarging body in the erect posture rests on a greater area of the bladder and presses more heavily upon it is certain, but there is no satisfactory proof that the cervix is appreciably lowered, if the woman be healthy and uninjured. It must be remembered that in normal non-pregnant women there are variations in the situation of the uterus in the pelvis, and that it usually lies at a lower level in women who have borne a number of children. Though the difficulty of establishing accurate topographical relationships by clinical means is great, it may be readily granted that, owing to the softening of the tissues of the pelvic floor and the increasing weight of the uterus, there may be a very slight descent of the organ as a whole in the first three months.

The normal anteversion and anteflexion tend to become more pronounced during the early weeks, but as the uterus grows upwards into the abdomen these characteristics become less marked. During the late weeks there may be slight descent of the organ as a whole, but more noticeable is the tendency to increased anteversion, the fundus falling downward and forward.

The most marked changes in the position of the fundus are found in multiparas with a relaxed abdominal wall, especially if there be marked separation of the recti. When the latter diastasis exists in an extreme degree the uterus may fall forward and bulge between the muscles when the patient is erect.

It is frequently stated that the uterus rotates on its long axis as it grows in pregnancy, the movement being either towards the right or left; most frequently in the former direction, so that the left border is moved forward in the pelvis.

In special investigations already made to determine the accuracy of this view I have shown that there is no proof that rotation characterizes the growth of the gravid uterus.

Rotation undoubtedly is occasionally found, but we cannot speak with certainty regarding the frequency of its occurrence. Clinically, it is impossible, save very rarely, to estimate it; the outline of the easily-moulded uterine bag cannot be sufficiently defined, nor can the landmarks necessary to the exact determination of rotation be made out.

No doubt in some cases conditions described as rotation have been really only the moulding of the uterus on the fetus by the examining hand, or against surrounding structures. Again, rotation has been described where it has not been true nor inherent but only accidental, due to displacement by distended bowel or bladder or to that caused by old adhesions or cicatrices.

In many cases the rotation found in pregnancy is only the continuance of the condition which was present in the non-pregnant state. We know that rotation is frequently present in the normal nullipara, and it is not surprising that it is also found in pregnancy.

Some authors have insisted that rotation exerts an important influence in modifying the position of the fetus. Such a statement is entirely speculative and is incompatible with our present knowledge of the anatomy of pregnancy.

100 State Street.

THE TECHNIQUE OF VAGINAL HYSTERECTOMY IN CASES OF PELVIC INFLAMMATION.*

BY WILLIAM R. PRYOR, M.D.,
New York City.

The late Dr. R. P. Harris, in conversation with a number of us some years ago, said: "I will *make* you men perform symphyseotomy." By this expression the Doctor intended to convey to us that he would produce such overwhelming evidence of the value of symphyseotomy that no reasonable surgeon could refuse to accept the operation as having distinct indications. I may not be in a position to make the profession adopt the operation under discussion, but at least I shall show how far better my results are now than when I approached these cases through the abdomen. And in order that others may have equally good results, I shall, as clearly as I am able, give the various steps of the operation.

Posture of Patient, (Fig. 1). The patient should be in the old lithotomy posture, her legs held flexed upon the abdomen by Clover's crutch. She should lie upon a table which will allow the operator to

*The illustrations used in this article are kindly furnished by Messrs. D. Appleton & Co., publishers of the author's "Text-Book of Gynecology."

lower the head of the table so as to secure the benefits of Trendelenburg's position. After the operation is completed a final inspection of the stumps is necessary, during which the intestines will not prolapse into the vagina, if the head of the table is lowered.



Fig. 1. Upon dropping the head of the table the pelvic muscles relax as soon as they cease to feel the necessity for supporting the viscera, and thus the valva is readily opened by retractors so that the pelvic contents may be inspected.

The Incisions. (Fig. 2). In most cases the posterior crescentic incision is first made, then the one anterior to the cervix. Between the adjacent ends of these two cuts I usually leave a small strip of vaginal skin. The incision outward from the sides of the cervix (Ségond's)

and along the anterior vaginal wall (Dührssen's) or down the posterior wall (Henrotin's) I seldom employ, and when either is used it is in case there is much contraction about the vault of the vagina due to connective tissue. Henrotin's cut I also use in cases having deep peritoneal pouches, so that the lowest point of these may be drained. The incisions are preferably made with stout scissors. The use of the cautery knife is entirely unnecessary and often consumes valuable time. After the posterior cul-de-sac is entered, a methodical examination of the pelvic contents is made. In effecting an entrance into the pouch of Douglas some difficulty may be experienced. In all cases the vaginal skin is readily incised and upon holding down the pos-



Fig. 2. The incisions agb and csd are the ones the author usually employs. Additional space may be secured by making Henrotin's (st) or Ségond's (ch and dr).

terior flap the loose connective tissue underlying the peritoneum comes into view. The operator holds the cervix by stout three-pronged forceps and attempts to enter Douglas' pouch by means of his finger. He may be disappointed to find that the peritoneum is unusually thickened and stout and merely rips up from the posterior surface of the uterus before the advancing finger. When this occurs, the incision should be freely exposed and the peritoneum pulled down by a tenaculum and incised.

Beginners in this line of work may be undecided whether the presenting part is the rectum or thickened peritoneum. In all cases a small amount of serous fluid is found in the pouch of Douglas, and this will show through the peritoneum when the latter has been thinned by the dissection. There are, however, cases in which the posterior

peritoneal pouch cannot be entered. In case an ectopic gestation has ruptured between the folds of the broad ligament, it may dissect the peritoneum up from the pelvic floor and from in front of the rectum. Again, a retroperitoneal fibromyoma may lift the posterior peritoneum out of reach. In the former case, the adnexa can be examined only after the bladder has been separated from the uterus; and in the lat-



Fig. 3. The cervix is held up and the crescentic fold behind the cervix shows where the incision must be made.

ter, the removal of the fibroid nodule will produce the desired breach into the peritoneal cavity. The posterior peritoneal pouch is readily entered either by simply incising the vagina and pushing the finger through the peritoneum or by the use of mouse-toothed forceps and scissors. The advantage is with the former method, as by means of the finger every step of the dissection can be felt.

It is more difficult to separate the bladder from the uterus. In certain cases I derive great assistance from my intra-uterine traction forceps which not only furnish a means of fixing a soft and small uterus, but also greatly aid the surgeon in differentiating the uterine from the vesical tissues. If the anterior tissues are severed too close to the external opening of the cervix, the dissection will be most difficult; but if made where the cervix joins the vagina it will proceed with ease through the loose reticulated tissue which lies between the bladder and the uterus. There are several ways in which the bladder may be separated from the uterus. I prefer to lay the edge of the closed scissors in the cut and to shove up the tissues in much the same way as a periosteum elevator is employed. In most cases but a moment is consumed in peeling the bladder up as high as the level of the internal os, and after that the fingers are employed to complete the dissection. Here, as posteriorly, the peritoneum may be found so thick as simply to peel up ahead of the entering finger. This can readily be determined and then the peritoneum is to be pulled down and cut by scissors. As a posterior retractor I employ the short, broad speculum of Jackson and a somewhat narrower instrument to hold up the anterior vaginal wall. Up to this stage the operator has made no attempt to separate more adhesions than will enable him to feel and, if necessary, to see the adnexa, or only sufficiently to determine the necessity for a radical operation. No attempt so far has been made to liberate the adnexa for removal. Upon the posterior vaginal wall a small artery, the azygos, has been cut, but except in puerperal and fibroid cases, is not sufficiently important to require even forcible pressure. If desired, it may be readily secured. I have noticed very frequently, as I peel up the bladder, that a substantial vessel extends obliquely across the anterior face of the cervix from one uterine artery to anastomose with the inferior vesical; and, while I have never kept count of the side from which it springs, the fact has been impressed upon me that it most always arises from the left uterine artery. This aberrant trunk is very large in women who have been recently delivered, and in fibroid cases. In all cases it should be secured and tied. After the operator has opened the posterior and anterior pouches of peritoneum, the incisions should be spread laterally. The posterior is so treated by means of the two index fingers, while one finger will suffice to push the bladder from the sides of the uterus as well as the front. This is done to make the rents in the peritoneum of equal size with the incisions in the vaginal skin. If the intestines tend to prolapse into the vagina, this may be prevented by introducing small gauze pads to

which are securely attached stout linen lines that they may be recovered, or by dropping the head of the table so that the diaphragmatic force will be overcome.

Hemisection. (Fig. 4.) This is an invariable, not an occasional, step in the operation. After, or even before the anterior peritoneal pouch has been opened, the operator splits the anterior face of the cervix with scissors as high up as he can see it. This will usually be up to the

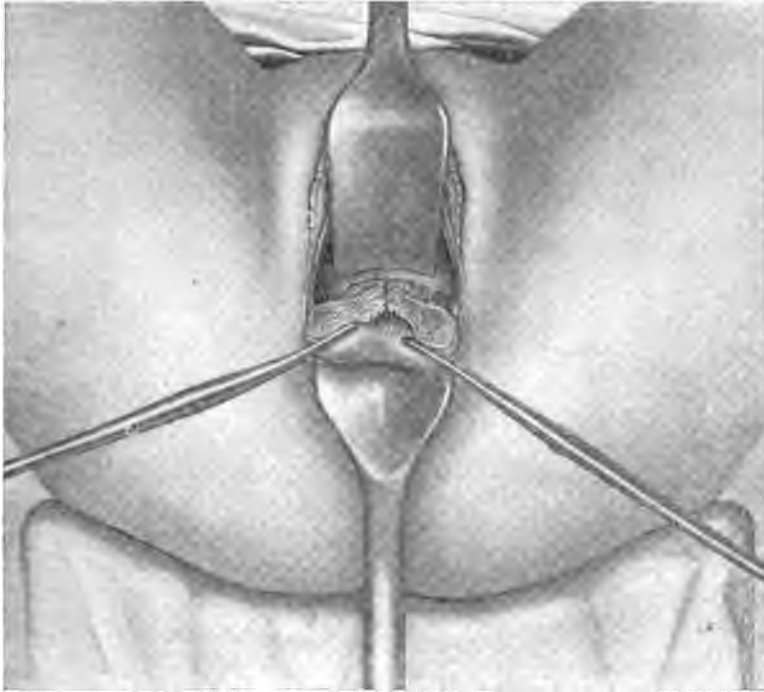


Fig. 4. First step in hemisection: splitting the cervix.

line of peritoneal reflection. While an assistant holds apart the edges of the severed cervix, the operator seizes the cervix upon each side of the apex of the cut and forcibly draws downward and outward. It will now be seen that a portion of the anterior face of the uterus appears covered by peritoneum. This is split in the median line, its sides grasped by heavy toothed forceps as before, and more of the uterus pulled down beneath the bladder. About three steps in this splitting of the anterior uterine wall will suffice, when the

cornua uteri will appear beneath the anterior incision, often somewhat abruptly. The operator now runs his finger up behind the uterus, keeping in the middle line until he can see or feel its tip above the fundus. Withdrawing the finger a retracting grooved director which I devised for this purpose is passed up until it shows beneath the anterior retractor. The posterior retractor is then withdrawn. This grooved

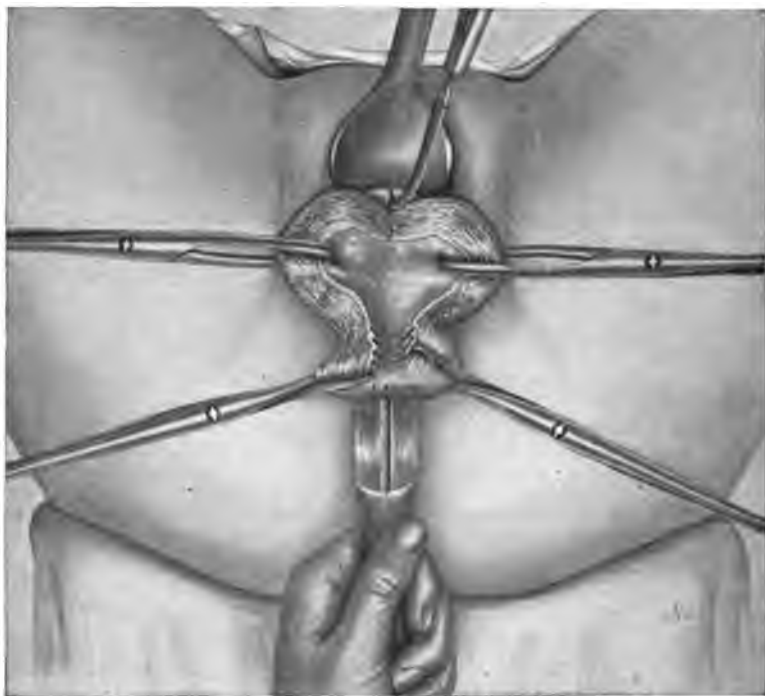


Fig. 5. The anterior wall of the uterus has been split and the grooved retractor is introduced behind the uterus. The knife is in place prepared to complete the hemisection.

director is used not only to retract the perineum, but also to draw the uterus forward. It is therefore particularly useful in large, soft uteri the tissues of which tear under the toothed forceps. Into this director a special bistoury is introduced and the posterior wall of the uterus is cut through. (Fig. 5). The uterus is now halved. The peculiarity of the bistoury is that the cutting edge is along its convexity. The moment the uterus is split in two the bilateral fixity is done away with, and upon each side at least part, the uterine, of the mass be-

comes freely movable. The operator therefore has to deal with movable halves of the uterus, attached to which are the corresponding adnexa adherent to the broad ligaments or pelvic wall. Furthermore, the uterus which up to this point has blocked the entrance to the pelvis, is no longer a hindrance. The right half is released from the forceps and is shoved up into the pelvis, and all retractors are withdrawn. The operator then pulls the left half of the uterus out of the vulva



Fig. 6. All retractors are withdrawn. The hand has been forced into the pelvis to free adhesions, while the left half of the uterus is pulled down.

and introduces his left hand up to the thumb into the vagina. (Fig. 6). This enables him to manipulate the higher adhesions perfectly. If he feels that the omentum or intestines are attached to the uterus or adnexa he can introduce retractors and separate the adhesions under the guidance of the eye. Whenever a tubo-rectal fistula is known to exist, that tube is handled last. After the left tube and ovary are rendered so movable that they can be brought beneath the bladder and into the vagina, these are released and with the attached half of the uterus are

returned into the pelvis. The right half of the uterus is now drawn down and its adherent adnexa liberated by the right hand introduced as was the left. If the vulva is contracted by the formation of connective tissue, as in some old cases and in women past the menopause, it may be necessary to lubricate the hand with boroglyceride or sterile vaseline before it can be introduced. I have never found it necessary to split the perineum. Were I unable to make a complete operation without doing so I would abandon it and perform laparotomy. Neither is it necessary to pass a bougie into the rectum. In fact, doing so conduces to its injury. All the tissues should be movable. After both sets of adnexa have been rendered movable, hemostasis is done. Up to this point the operator has not attempted hemostasis, but has bent all his energies to liberating the organs to be removed. So long as the uterus was pulled down the bleeding was trivial, but when one-half is shoved up and during the liberation of the adnexa the bleeding is free. If the surgeon stands in ignorance of its cause and in fear of its importance and puts on forceps before the adnexa are liberated, he will probably find that he will be unable to secure the ovarian arteries outside the ovaries and will be compelled to content himself with an incomplete operation. As the operation was first done here it proceeded under preliminary hemostasis, the uterine arteries and then the broad ligaments being clamped and serially severed. It was no unusual thing to see patients with eight or more pairs of forceps sticking in the vagina and large portions of diseased adnexa left high in the pelvis. Rarely, very rarely, is a quarter of an hour needed to release and remove the tissues under a complete hemostasis. During this time the bleeding is parenchymatous only. The same manual dexterity which will enable the operator to free a pus focus from the iliac vessels through an abdominal incision, will more easily accomplish the same manœuvre through the vagina.

A forceps is first applied to an ovarian artery. One-half of the uterus is pulled out of the vagina and its adnexa brought forward. No retractors are necessary. The forefinger upon one side of the broad ligament and the middle finger upon the other, while the thumb powerfully doubles the uterus and holds the adnexa, converts the entire mass into a pedunculated one and the forceps is applied from above downward. This forceps grasps the top of the broad ligament and the round ligament. It is locked and its handles removed. (Fig. 7). The tissues are cut to its ends and another forceps applied to the rest of the tissues, including the uterine artery, locked, and its handles removed. The uterus and adnexa are then cut

away. The other half of the uterus with its adnexa are similarly treated. Anterior and posterior retractors are then introduced and lateral blades used to hold back the forceps and their stumps. Several



Fig. 7. The right half of the uterus is doubled upon itself. The broad ligament lies between the index and middle fingers, while the thumb grasps the adnexa. The forceps is grasping the top of the right broad ligament.

gauze pads are passed into the pelvis to take up blood and discharges. The operator then makes a careful inspection of the stumps to identify the four cardinal vessels and to assure himself that there is no bleeding. The dressings are then made. In this more than in any other

regard does my technique differ from that of the French surgeons. I have classified this operation as the formation of four stumps or pedicles which will slough and which must therefore be treated extraperitoneally. And the dressings must be so adjusted as to maintain the stumps outside the pelvis and in the vagina after the forceps are removed. Furthermore, this pelvic Mikulicz must be sufficient to isolate the field of operation from the peritoneal cavity and to absorb all discharges. Repeated examinations have shown that the dressing



Fig. 8. Method of applying the pelvic Mikulicz dressing which supports the the forceps and stumps.

also destroys all cocci, a matter of great importance in streptococcus infection, in which not only the uterus and adnexa are involved, but the retroperitoneal tissues as well. The dressings are applied in the following manner. I use Péan's narrow retractor to draw down the perineum and vagina and my narrow trowel to lift the anterior vaginal wall. The gauze pads are removed. The forceps are all drawn down carefully until their stumps are in the vagina. While holding each set in this position, a piece of iodoform gauze is adjusted between the forceps and the vagina, and by means of a long, narrow re-

tractor these two forceps are held firmly against the side of the vagina. (Fig. 8). The same is done upon the other side. Then, between the forceps so held, I introduce enough folded strips of iodoform gauze to create a stout bilateral pressure. The gauze between the forceps extends just above their tips, and in applying it the operator should see that at no point does a forceps touch the soft parts, particularly the intestine and bladder. A self-retaining catheter is now introduced and the sphincter ani dilated. This is done to lessen spasm of the lavator ani, the sphincter's opposing muscle. I remove the



Fig. 9. Appearance of specimen removed by the classical operation of hemisection.

forceps in 48 hours, and six hours later wash out the bladder and remove the catheter. I cannot here describe the after-treatment.

I am frequently asked what position the ureters assume during this operation. I have determined this by repeated dissections. As stated, the operator should see that the bladder is entirely freed from attachment to the uterus. With the perineum held down and the bladder up, down-traction upon one-half of the uterus removes the cervix and its vessels away from the ureter.

I will complete a report of my cases to date. In this list, as in the previous one, I have included the fibroid cases, for very often fibroids are associated with pelvic inflammation, and pus cases often show small fibroid nodules in the severed uterine walls.

REPORT OF CASES

181 Operations; no deaths: previously reported in "American Medicine," April 27, 1901

NO.	DATE	CASE	AGE	HOSPITAL	FROM	DIAGNOSIS	OPERATION	RESULT
182	May 29, '01	Y. G.	22	Polyclinic	Clinic	Syphilis, bilateral pyosalpinx	Vaginal hysterectomy, hemisection	Cured
183	June 13, '01	A. B.	20	Polyclinic	Dr. Vineberg	General pelvic adhesions, hemorrhage of right ovary, right salpingitis	Vaginal hysterectomy, hemisection	Cured
184	Sept. 28, '01	Mrs. B.	43	Polyclinic	Clinic	Chronic salpingitis and prolapse	Vaginal hysterectomy, hemisection	Cured
185	Oct. 31, '01	Mrs. MW	38	Polyclinic	Clinic—Dr. Mary Doolittle	Double pyosalpinx and ovaritis	Vaginal hysterectomy	Cured
186	July 18, '01	L. S.	27	Polyclinic	Clinic	Hydrosalpinx, ovarian abscess on right side, left pyosalpinx. Patient died from secondary hemorrhage due to the fact that the nurse had put together forceps which were not mates, and the blades of the forceps on the left uterine artery did not meet	Vaginal hysterectomy, secondary laparotomy; no bleeding point found.	Died
187	Jan. 25, '02	B. A.	20	Polyclinic	Clinic	Bilateral pyosalpinx, gonorrheal urethritis	Vaginal hysterectomy, hemisection	Cured
188	Jan. 25, '02	R. A.	28	Polyclinic	Clinic	Double hydrosalpinx, multiple adhesions, recurrent attacks peritonitis	Vaginal hysterectomy, hemisection	Cured
189	Mar. 13, '02	Mrs. T.	37	Polyclinic	Clinic—Dr. M. Aronson	Fibroids with diffuse suppuration	Vaginal hysterectomy, morcellation	Cured
190	May 5, '02	J. S.	27	Polyclinic	Clinic	Diffuse pelvic suppuration	Vaginal hysterectomy, hemisection	Cured
191	May 26, '02	F. R.	34	Polyclinic	Clinic	Multiple Fibromyoma	Vaginal hysterectomy, morcellation	Cured
192	Mar. 6, '02	B. P.	20	Polyclinic	Laparotomy for appendicitis six months ago.	Pyosalpinx	Vaginal hysterectomy, hemisection	Cured

193	Mar. 1, '02	H. W.	23	Polyclinic	Clinic—Dr. C. Laase	Pelvic suppuration	Vaginal hysterectomy, Cured hemisection
194	Dec. 22, '02	J. K.	40	Polyclinic	Dr. Whitney	Pelvic adhesions, right ovary cystic, left pyosalpinx, broncho-pneumonia during convalescence	Vaginal hysterectomy, Cured hemisection
195	Nov. 17, '02	J. G.	21	Polyclinic	Clinic	Right hydrosalpinx, left pyosalpinx	Vaginal hysterectomy, Cured hemisection
196	Nov. 1, '02	E. N.	23	Polyclinic	Dr. Taylor	Bilateral pyosalpinx	Vaginal hysterectomy, Cured hemisection
197	June 11, '02	E. B.	32	Polyclinic	Clinic	Bilateral pyosalpinx, ovarian abscess	Vaginal hysterectomy, Cured hemisection
198	June 5, '02	S. S.	20	Polyclinic	Clinic	Diffuse pelvic suppuration	Vaginal hysterectomy, Cured hemisection
199	May 22, '02	M. M.	30	Polyclinic	Clinic	Diffuse pelvic suppuration	Vaginal hysterectomy, Cured hemisection
200	May 22, '02	M. F.	23	Polyclinic	Clinic	Tuberculosis of tubes and ovaries	Vaginal hysterectomy, Cured hemisection
201	May 12, '02	M. W.	35	Polyclinic	Clinic	Uterine fibroids	Vaginal hysterectomy, Cured hemisection
202	Mar. 27, '02	M. W.	—	Polyclinic	Clinic—Dr. Alfred Riedel	Bilateral pyosalpinx	Vaginal hysterectomy, Cured morcellation
203	Mar. 22, '02	A. McB.	35	Polyclinic	Clinic—Dr. D. T. Macdonald	Bilateral pyosalpinx	Vaginal hysterectomy, Cured hemisection
204	Jan. 12, '02	B. R.	—	Polyclinic	Clinic	Bilateral pyosalpinx	Vaginal hysterectomy, Cured hemisection
205	Mar. 29, '02	E. F.	38	Polyclinic	Clinic		
206	Mar. 20, '02	S. F.	20	Polyclinic	Clinic	Diffuse pelvic suppuration	Vaginal hysterectomy, Cured hemisection

REPORT OF CASES—Continued

NO.	DATE	CASE	AGE	HOSPITAL	FROM	DIAGNOSIS	OPERATION	RESULT
207	Nov. 13, '02	M. H.	32	Polyclinic	Clinic—Dr. Alfred Riedel	Right broad ligament fibroid, small fibroids, of uterine body	Vaginal hysterectomy, morcellation	Cured
208	Sept. 11, '02	I. M.	27	Polyclinic	Clinic	Had been operated upon by laparotomy for removal of one pyosalpinx. There existed abdominal sinus	Removed the uterus by vagina with right pyosalpinx; excised abdominal sinus; failed hemisection.	Recovered, but sinus to close
209	Oct. 6, '02	R. G.	30	Polyclinic	Clinic	Bilateral pyosalpinx	Vaginal hysterectomy, hemisection	Cured
210	June 18, '02	T. B.	57	Polyclinic	Clinic	Uterine fibroids	Vaginal hysterectomy, morcellation	Cured
211	Apr. 27, '02	D. S.	42	Polyclinic	Clinic	Prolapse of uterus and old tubo-ovarian lesions	Vaginal hysterectomy, en masse	Cured
212	Oct. 24, '02	Mrs. H.	30	Polyclinic	Dr. Curtis	Bilateral pyosalpinx, left ovarian cyst	Vaginal hysterectomy, hemisection	Cured
213	Dec. 12, '01	M. R.	22	Polyclinic	Clinic—Dr. B. Torrens	Genital sclerosis, left broad ligament cyst	Vaginal hysterectomy, hemisection	Cured
214	Apr. 5, '02	M. A.	35	St. Vincent's	Dr. McSwords, Heppner, Ore.	Bilateral miliary and ulcerative tubercular salpingitis. In the second week of convalescence fulminating appendicitis	Vaginal hysterectomy, hemisection, appendectomy	Cured
215	May 5, '02	A. R.	54	St. Vincent's	Dr. McKay, Canton, N. Y.	Multiple uterine-fibroids, extending two inches above pubis	Vaginal hysterectomy, morcellation	Cured
216	June 29, '02	A. T.	28	St. Vincent's	Dr. McKay, Canton, N. Y.	Chronic inflammation in stumps of previous abdominal salpingo-oophorectomy. Persistent pelvic pain and recurrent attacks of pelvic peritonitis	Vaginal hysterectomy, hemisection	Cured

217	July 23, '02	C. F.	22	St. Vincent's Dr. Fowler, Des Moines, Ia.	Chronic bilateral salpingitis	Vaginal hysterectomy	Cured
218	June 28, '02	K. T.	52	Sanitarium Office	Multiple uterine fibroids—ovaries and tubes left	Vaginal hysterectomy, morcellation	Cured
219	Oct. 3, '02	E. McK.	37	Sanitarium	Dr. Gregory, California, curetted Fibroids 3 times for hemorrhages	Vaginal hysterectomy, morcellation	Cured
220	June 5, '02	R. L. W.	30	Sanitarium	Dr. Dale, Texas	Vaginal hysterectomy, hemisection	Cured
221	June 18, '02	Mrs. D.	26	Sanitarium	Dr. Heyman, Brooklyn Dr. Cushing, Boston	Vaginal hysterectomy, hemisection	Cured
222	Sept. 2, '02	M. K.	30	Sanitarium	Dr. Strauss	Bilateral tubo-ovarian abscess, small intestine on point of gangrene from strangulation by adhesions	Cured
223	Jan. 8, '03	A. O.	23	Polyclinic	Dr. Kolb	Bilateral pyosalpinx, etc.	Cured
224	Jan. 19, '03	Mrs. M.	46	Polyclinic	Bilateral ruptured ectopic gestation; genital septicæmia; double broncho-pneumonia	Vaginal hysterectomy, hemisection	Cured
225	Dec. 14, '02	Mrs. S.	30	Sanitarium	Dr. Albert Kohn	Right hydrosalpinx, cystic ovary, left pyosalpinx	Cured
226		W. L.	46	Sanitarium	Dr. Griswold, Greenwich, Conn.	Chronic tubo-ovarian disease. Multiple adhesions. A chronic invalid	Cured
227	Case in Buffalo		by	courtesy of Prof. Matthew D. Mann	Chronic bilateral salpingitis. Multiple adhesions	Vaginal hysterectomy, hemisection	Cured
228	Case in Boston		by	courtesy of Dr. Charles G. Cumston	Bilateral pyosalpinx	Vaginal hysterectomy, hemisection	Cured

Total, 228 cases; one death; mortality, 0.4 per cent.

6 West 84th Street

HYSTERECTOMY IN PUERPERAL SEPTIC INFECTION.*

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The confused status of hysterectomy in puerperal septic infection is well exemplified in the recent discussion before the International Congress of Obstetricians and Gynecologists at Rome. The symposium affords the most elaborate study of the subject that appears in the literature. The participants were principally Europeans. Brief allusion to some of the more important phases of that discussion may serve to show how the question is regarded abroad.

Conspicuous among the opponents of the operation is Treub. He cites an experience of 724 cases of puerperal infection of which 34 died. In six of the latter there was no clinical evidence of infection that had extended beyond the uterus, yet at autopsy acute septic nephritis, purulent thrombosis and other grave lesions were found in all but two. These cases afford a striking illustration of the chief obstacle to surgical endeavor in this field which is the difficulty in differentiating clinically between operable and non-operable conditions in puerperal sepsis. That the facts, as Treub assumes, are necessarily fatal to all attempts at surgical relief can by no means be granted in view of the results that have been obtained by many surgeons in grave forms of septic infection.

Treub collected 36 cases of ablation of the uterus in which no other structures were involved. Fifteen recovered and these, he believes, might have recovered without hysterectomy. He emphasizes the fact that sometimes seemingly hopeless cases recover spontaneously. The thought seems to have escaped him that some of the 34 women that died might have been saved by surgical intervention. Bacteriologic examination of the blood he thinks of little practical value for determining the indication.

Tuffier would operate in exceptional instances; yet he recognizes the difficulty in the proper selection of cases. He very aptly says, "To operate too early is criminal; to operate too late is useless."

*Read before the Washington Obstetrical and Gynecological Society, Washington, D. C., January 16th, 1903.

Pinard enumerates as indications:

1. Retention of putrid placental fragments.
2. Necrotic myomata.
3. Perforation of the uterus.

Freund limits the indications to:

1. Placental retention, partial or total, that has resisted other methods of treatment.

2. Septic criminal abortion and metritis with pyemic symptoms.

In the earlier stages of sepsis he elects the abdominal route; in the later he prefers the vaginal. He advises the excision of thrombotic veins in the broad ligament.

Leopold advocates extirpation of the uterus in:

1. Uterine phlebitis with septic thrombosis. The veins of the broad ligament when involved should be excised if the condition of the patient permits.

2. Septic endometritis with involvement of the adnexa.

3. Multiple pus foci in the myometrium with pelvic peritonitis.

4. Certain cases of myoma, ovarian tumor and other pelvic neoplasms in which gangrene and pelvic peritonitis have resulted from the traumatism of labor.

5. Placental retention not amenable to simpler measures. He refers to the favorable results obtained by opening and draining the peritoneum in general peritonitis. Here interference must be practiced early before the infecting organisms have traversed the diaphragm.

Zweifel has operated successfully in two cases of diffuse peritonitis. These, however, he thinks, were probably of gonorrheal origin.

Bumm¹⁵ closes a recent monograph on this subject with the conclusion that hysterectomy is seldom justifiable. Nearly all the suppurating processes he thinks capable of spontaneous recovery. Yet he recognizes as possible indications injuries of the uterus inflicted with instruments, deep seated gangrene induced by necrotic myomata, or by prolonged retention of fetal parts, or of large placental fragments. Total abdominal hysterectomy, he believes, is best for isolating the peritoneum.

Faure²⁸ has performed seven vaginal hysterectomies with six deaths. He rejects the abdominal operation, because of the greater danger of infection by the latter route.

Trotta²³ reports 24 recoveries in 45 collected cases.

In our own country, Vineberg, in New York, Baldy, Hirst and

Montgomery in Philadelphia, are well known advocates of the operation.

Hirst^{42-43, 60} during the last eight or nine years has operated in a considerable number of cases, and at all times after labor from four days to six weeks, in most instances later than two weeks. These are not all included in the table of cases which follows. The indications have been suppurative metritis, or a necrotic condition of the myometrium from streptococcic infection. He prefers as a rule abdominal amputation of the uterus at the internal os. Several times he has exsected only the diseased portion of the uterus at one cornu, sometimes the entire fundus. His results have been good. The work of other American operators will be found in the tabular statement below.

Davis⁶⁰ of Philadelphia, does not recognize the necessity for hysterectomy in puerperal sepsis in cases in which the genital canal has been thoroughly emptied and disinfected immediately after infection occurred and systemic treatment has been properly carried out. When surgical measures are required he opens the abdomen, loosens all recent adhesions, packs with iodoform gauze and drains.

Peterson⁵⁹ who, a few years ago strongly advocated the operation, in the light of later experience, thinks it seldom justified.

Referring again to the views of Treub, some of the secondary septic infections, which he apparently holds should discourage surgical intervention, are counted by others as indications for operation. Experience has shown that ablation of the primary and the principal focus of infection, when the woman's condition permits, may favor spontaneous recovery from the remote infection. Timely intervention may *prevent* serious secondary lesions. This has proved true, especially in virulent infection of the pelvic veins.

Bumm, Freund and Trendelenburg, have ligated thrombotic veins in the broad ligament with success. Baldy, in the course of a hysterectomy for puerperal sepsis, removed large septic thrombi from the pelvic veins of a woman who recovered.

In a recent paper on the "Operative Treatment of Puerperal Pyemia," Sippel⁷⁰ refers to a case operated upon by Trendelenburg in which a right parametric pelvic abscess was drained by vaginal incision. Later he ligated the right hypogastric vein. Chills reappeared after about 10 days. A portion of the ovarian vein, 5 cm. in length, was ligated and resected. The thrombi contained streptococci. From this time no chills occurred, and slow convalescence followed after in-

cision of a subcutaneous metastatic abscess in the right scapular region.

Operative measures in puerperal thrombo-phlebitis were advocated by Sippel⁷⁶ in an earlier paper, in 1894. "Moderate peripheral phlebitis manifesting no tendency to spread, usually subsides spontaneously. On the contrary, the prognosis in the grave forms of phlebitis attended with repeated chills and high temperature, is generally hopeless. Here a virulent thrombosis exists whose tendency is to spread rapidly, producing metastases, and a fatal result ensues unless something is done before the thrombi have progressed beyond reach. In such cases mere ligation of the veins is not sufficient. They must be excised and the uterus extirpated, vaginal drainage being employed." This procedure at the proper time may apply not only in chronic, but even in acute forms of puerperal pyemia.

It is true, as Davis⁶⁰ contends, that were all obstetric patients properly treated at the onset of infection there would be little occasion for major surgery. It is equally true that there would be practically no puerperal sepsis if due care and skill were exercised by all obstetric practitioners. Yet every gynecologist sees many cases of virulent childbed infection, and the death rate is by no means so small as Treub seems to assume. The experience of a well ordered hospital service is scarcely comparable to that of the average family practitioner. Most of these infections are seen late by the specialist, and often only after repeated and ill-advised interference within the uterus. Who of us has not realized the futility of the usual medical measures when asked to advise in the treatment of grave septic poisoning?

In 1895, Baldy³ published a list of 19 American hysterectomies performed for puerperal septic infection. Later Zipperlen added to this list 24 American operations performed between 1895 and 1898, together with a number of foreign cases. Among the latter are eight Porro Cesarean sections which have been included in the list, presumably because they were complicated with sepsis.

In the present paper I have tabulated the foregoing material, and in addition to it such cases of hysterectomy for childbed sepsis as could be gathered from the literature and from private sources. The table comprises 116 operations. No attempt has been made to make the record complete. Only the salient features of each case have been noted. Even these have not in all instances been fully obtainable. Unfortunately the list comprises a larger proportion of the successes than the failures in this field of work. Many factors, too, enter into the results which cannot be estimated from the brief

reports available. One defect which impairs the value of the list for estimating the prognosis of hysterectomy in different septic conditions in childbed is the almost total neglect of bacteriologic diagnosis. In few instances has the character of the infection been definitely made out by bacteriologic examination of the blood or lochia. For these and other reasons no great statistical value can attach to the summary. Yet the material collated may, I trust, contribute something to the study of the question.

Of 116 collected operations, in four the result was not stated. Of the remaining 112 cases, 59 resulted successfully, 52 per cent.

In 34 operations after term labor, there were 17 recoveries, 50 per cent; in 28 after septic abortion there were 11 recoveries, 39.2 per cent.

In 25 cases in which no extrauterine structures were involved, 19 were saved, 76 per cent.

Of 12 patients in whom peritonitis of some degree was found at operation two, or 16.6 per cent., recovered. One of the two that survived was reported as having turbid fluid in the peritoneum, the other, pelvic peritonitis. Of four cases in which pus was encysted in the peritoneum three recovered.

In 12 cases in which bacteriologic examinations were made, streptococci were found, either in the uterine cavity or in the myometrium. Of these, two survived operation, both localized pus collections.

In 17 cases operated upon within the first week after delivery there were 64.7 per cent. of recoveries. Seventeen operations performed during the second week gave 52.9 per cent. of successful results. In the third and later weeks collectively there were 66 per cent. of recoveries.

In 54 abdominal hysterectomies there were 27 recoveries, 50 per cent.; and in 29 vaginal operations there were 14 successful results, 48.8 per cent.

Three cases of supravaginal amputation with extraperitoneal treatment of the stump, all recovered.

While the total percentage of recoveries shown in the table means little for the prognosis of the operation, yet, the large number of successes under most unfavorable conditions is significant. Nearly every instance in which the women survived must be counted a life saved by the operation. With few exceptions the prospect as indicated by the clinical facts and the findings at operation was manifestly hopeless but for the radical course adopted.

Naturally the largest proportion of successes was obtained when

the infection, apparently, was limited to the uterus. This class includes cases in which the uterus had been injured by the curette or otherwise, total or partial placental retention, septic myomatous uteri, multiple abscesses of the myometrium, pus collections beneath the uterine serosa and necrotic areas in the uterine wall.

No instance of recovery appears in which there was a clearly established diffuse peritonitis. Zweifel has referred to two cases of general peritonitis in his practice saved by drainage. But these, as already stated, he believed to be of gonorrheal origin.

The post-operative mortality was highest when the operation was done in the second week. Doubtless the largest proportion of deaths in the natural course of the disease falls in the second week. Apparently the best results were obtained after the most virulent stage of the septic process had passed and at a time when the infection had in some instances become localized.

No material difference appears in the results as between the abdominal and the vaginal operation.

The experience presented justifies the conclusion that, while hysterectomy is very seldom demanded in the treatment of puerperal septic infection, the operation cannot wholly be rejected. In rare instances it is clearly indicated.

Little as surgery can do in the class of infections in question, the experience summarized strongly suggests the unwisdom of resigning them wholly to medical treatment. The obstetrician who is not himself a surgeon may well take the surgeon oftener into his counsel.

When other means have been tried faithfully and the usual measures are apparently powerless to avert a fatal issue, surgical intervention should be considered.

Usually the most perplexing question for the clinician is the precise location and extent of the infectious process. This and other doubts may be solved by exploration of the pelvic contents through a small abdominal incision. Explorative section may sometimes open the way to saving cases which otherwise are permitted to die. When the uterus proves to be the chief source of danger from causes not amenable to lesser measures, there can be no question about its partial or total ablation if the general condition of the woman permits. Other septic conditions in the pelvis may be dealt with as occasion requires.

TABLE OF CASES

OPERATOR	CLINICAL DATA	PERIOD AFTER DELIVERY	OPERATION	PATHOLOGIC FINDINGS	RESULT
Ashton ¹	Term; temp., 100°; pulse, 120	1 Month	Ablation of uterus and appendages per abdomen	Pus in the uterine wall, in the tubes and ovaries; necrosis and perforation of uterine wall; eight ounces of pus in peritoneum	Death in 24 hours
Ashton ²	Temp., 100°; pulse, 120	10 Weeks	Uterus and appendages removed	Uterine wall infiltrated with pus; abscesses in right broad ligament and ovary	Recovery
Baldy ³	Abortion	16 Days	Hysterectomy	Cellulitis of broad ligament; pus foci in uterine wall; no intraperitoneal adhesions	Death soon after operation
Baldy ⁴	Abortion; temp., 104°; pulse, 130	2 Weeks or more	Abdominal hysterectomy and double salpingo-oophorectomy	Uterus large, soft and containing pus foci; retained portions of necrotic placenta; pus tubes; intraperitoneal abscesses	Death from double pneumonia 2 weeks after operation
Baldy ⁷	Abortion at 2d month; purulent uterine discharge	1 Week	Abdominal hysterectomy; ovaries and tubes removed	Uterus large, soft, friable; tubes contained pus; ovaries large, soft and about to break down; abscess in pelvic wall	Recovery after phlegmasia alba dolens
Baldy ²	Term; manual extraction of placenta; temp., 104°; pulse, 140	22 Days	Suprapubic amputation; removal of larger part of broad ligament	Thrombi in uterine veins	Recovery
Baldy ⁴	Term; temp., 102°; pulse, 130	1 Month	Abdominal hysterectomy; left tube and ovary removed	Left tube and ovary both adherent and distended with pus	Recovery
Bicknell ⁵	Term		Abdominal hysterectomy		Recovery
Bicknell ¹⁰	Term		Abdominal hysterectomy	Necrosis of uterine wall	Recovery
Foldi ⁶			Four vaginal hysterectomies	Virulent streptococcal infection	4 Deaths

Bouglé ¹¹			Vaginal hysterectomy	Pus foci in pelvic peritoneum	Death
Bumm ¹²	After-coming head retained 2 1/2 Days days; putrid uterine discharge; pronounced sepsis	Supravaginal amputation; extra-peritoneal treatment of stump			Recovery
Bumm ¹²	Abortion at 3d month	Vaginal hysterectomy			Recovery
Bumm ¹²	Term	Supravaginal hysterectomy		Streptococcic endometritis; diphtheroid membrane; peritonitis	Death
Bumm ¹²	Term	Supravaginal hysterectomy		Streptococcic endometritis; diphtheroid membrane; peritonitis	Death
Bumm ¹²	Term	Supravaginal hysterectomy		Streptococcic endometritis; diphtheroid membrane; peritonitis	Death
Bouilly ¹²	Abortion	Vaginal hysterectomy		Uterus highly septic; peritoneum intact	Death by exhaustion
Cartledge ¹⁷	Term	Abdominal hysterectomy		Multiple abscesses in the myometrium	Recovery
Cartledge ¹⁸	Term	Abdominal hysterectomy		Multiple abscesses in the myometrium	Death
Cartledge ¹⁸	Septic incomplete abortion; temp., 101.9°; pulse, 128	Vaginal hysterectomy		Left uterine cornu gangrenous; tubes and ovaries not involved; eight to sixteen ounces of turbid serum in the peritoneum	Recovery
Carpenter ¹⁸	Abortion at 3d month; temp., 105.5°; pulse 140	Vaginal hysterectomy			Recovery
Coe		Abdominal hysterectomy			Death in collapse
Cragin ¹⁹		Abdominal hysterectomy			Death
Cragin ¹⁹		Vaginal hysterectomy			Recovery
Cragin ²⁰		Vaginal hysterectomy			Death
Cragin ²⁰		Abdominal hysterectomy			Death

TABLE OF CASES—Continued

OPERATOR	CLINICAL DATA	PERIOD AFTER DELIVERY	OPERATION	PATHOLOGIC FINDINGS	RESULT
Cragin ⁶⁰			Vaginal hysterectomy		Recovery
Cragin ⁶⁰			Abdominal hysterectomy		Death
Davis ^{52, 53}	Term	2 Weeks	Supravaginal amputation; extra-peritoneal treatment of stump	Multiple abscesses in uterus under peritoneum; tubes and ovaries healthy	Recovery
Doederlein ⁵⁵	Term	5 Days	Supravaginal amputation and drainage	Streptococci pus in peritoneum	Death in 12 hours
Doederlein ⁵⁵		4 Days	Vaginal hysterectomy with clamps	Not stated	Recovery; phlegmasia alba dolens
Doederlein ⁵⁵	Dead fetus		Supravaginal amputation	Uterus septic; bicornis	Recovery
Freund ⁵¹	Manual extraction of placenta		Abdominal hysterectomy with extirpation of adnexa and spermatic veins	Thrombo-phlebitis of uterus and purulent softening of thrombi	Death
Fritsch ⁵²	Rachitic		Porro operation; entire uterus and fetus removed		Recovery
Goffe ⁵⁴		13 Days	Hysterectomy	Uterus permeated with pus; both ovaries and tubes contained pus	Death in 36 days from pneumonia
Goffe ⁵⁴	Necrotic material in uterus after term labor	6 Weeks	Hysterectomy	Uterine wall, tubes and ovaries suppurating; abscess in right broad ligament	Death in 36 days

Goldsbrough ²⁰	Term; temp., 105°; pulse, 130-5 Days	Abdominal hysterectomy; ovaries and tubes removed	Necrotic areas in myometrium	Recovery; phlegmasia alba dolens
Grandlin ^{21, 22}	Uterus large and boggy; both broad ligaments boggy; abdomen slightly tympanic; perforation of uterus during curettage	Total abdominal hysterectomy	Pus tubes; pus in wall of uterus; various pathogenic organisms; no streptococci	Recovery
Hegar ²³	Retained placental fragments	Vaginal hysterectomy	Uterus softened at placental site; myocarditis and pulmonary edema	Death 25 days after operation
Hergott	Tumor complicating labor; septic	Supravaginal hysterectomy		Death during operation
Hirst ^{24, 25}	Advanced sepsis; temp., 102°; pulse, 140	Complete abdominal hysterectomy	Extensive necrosis; mesocolon broken down into abscesses	Death
Hirst ^{24, 25}	Term	Hysterectomy	Necrosis of fundus and one cornu; tube and broad ligament infected	Recovery
Hirst ^{24, 25}	Term; submucous fibroma; 4th Day temp., 104°; pulse, 140; streptococci in uterine discharge	Hysterectomy	Abscesses in uterine wall; both tubes and one ovary distended with pus; broad ligament infiltrated with pus	Recovery
Hirst ^{24, 25}	Term	Hysterectomy	Extensive infection; necrosis of tumor	Recovery
Hirst ^{24, 25}	Term	Hysterectomy	Suppurative metritis; large broad-ligament abscess, pus tube and ovarian abscess	Recovery
Hirst ^{24, 25}	Term	Hysterectomy	Large fibroid tumor of broad ligament; center of tumor necrotic	Recovery
Hirst ^{24, 25}	Term; suppurative metritis	Hysterectomy	Pus in both ovaries and tubes; abscess in pelvic cavity; three abscess cavities in myometrium	Recovery

TABLE OF CASES—Continued

OPERATOR	CLINICAL DATA	PERIOD AFTER DELIVERY	OPERATION	PATHOLOGIC FINDINGS	RESULT
Hirst ^{42,43}	Term		Partial hysterectomy; fundus excised and uterine cornu	Streptococcal infection	Recovery
Hirst ^{42,43}	Term		Partial hysterectomy; fundus and one uterine cornu excised	Streptococcal infection	Recovery
Hirst ^{42,43}	Term	5 Weeks	Supravaginal amputation	Uterus ruptured across fundus; necrotic myometrium	Recovery
Hirst ^{42,43}	Term	2 Weeks	Hysterectomy	Diphtheritic endometritis; no involvement beyond uterus	Death
Hirst ^{42,43}	Abortion		Hysterectomy	Suppurative metritis	Death
Hirst ^{42,43}	Abortion		Hysterectomy	Suppurative metritis	Death
Hirst ^{42,43}	Abortion		Hysterectomy	Suppurative metritis	Death
Ipma ⁴⁴	Term	13 Days	Vaginal hysterectomy	Myocarditis; pulmonary edema	Death in 25 days
Jewett	Term; mixed, septic and gonorrheal infection; temp., 106°; pulse, 140	2 Weeks	Supravaginal amputation	Pus in veins of right broad ligament	Death
Jewett	Term; uterus lacerated and septic; temp., 102°; pulse, 120	30 Hours	Supravaginal amputation	Rupture of body of uterus	Recovery
Klein ⁴⁵	Abortion; removal of placental polyp with curette	Several days	Vaginal hysterectomy	Parametric abscess; pus in uterine veins	Recovery
Makenrod ⁴⁶	Abortion at 3d month; delirium	3 Days		Septic endometritis	Recovery

TABLE OF CASES—Continued

OPERATOR	CLINICAL DATA	PERIOD AFTER DELIVERY	OPERATION	PATHOLOGIC FINDINGS	RESULT
Polak ⁴²	Metritis; perforation by curette	42 Days	Vaginal hysterectomy	Myometrium infiltrated with pus	Recovery
Polak ⁴⁰	Term	8 Days	Suprapubic hysterectomy; drainage of cul-de-sac	Turbid serum in peritoneum	Death in 24 hours
Polak ⁴⁰	Term; purulent uterine discharge	27 Days	Vaginal hysterectomy; clamps	Uterine abscess; left pus tube	Recovery
Polak ⁴⁰	Abortion at 2d month		Supravaginal hysterectomy; left salpingo-oophorectomy	Multiple abscesses in myometrium; left tubo-ovarian abscess	Recovery
Polk ⁴³	Abortion; uterine myomata		Hysterectomy		Death in 12 hours
Pryor ⁴⁷	Term; temp., 105.4°; pulse, 140; uterus soft; gonorrhea; ophthalmia in child	18 Days	Combined vaginal and abdominal hysterectomy	No peritonitis, no lymph, no pus; uterus soft and of dark color	Recovery
Pourtales ⁴⁴	General post-partal sepsis	6 Days	Suprapubic amputation	Thrombi in left utero-ovarian veins; sub-peritoneal abscesses found post-mortem	Death same day
Prochownick ⁴⁶	Abortion at 3d month	Few days	Vaginal hysterectomy	Uterus filled with streptococcic abscesses	Recovery
Prochownick ⁴⁶	Dead fetus expelled at 7th month; placenta retained		Supravaginal hysterectomy	Septic myomatous uterus	Recovery after various complications
Prochownick ⁴⁶	Incomplete abortion at 3 months; staphylococci and sapremic bacteria in uterine secretion; later, blood test showed pure culture of streptococcus		Abdominal hysterectomy	No evidence of extra uterine infection	Death from streptococcus abscess in lung

Prochownick ⁶⁶	Abortion; retained portions of secundines; blood examination showed streptococci in abundance		Vaginal hysterectomy with clamps	No evidence of infection outside of the uterus; streptococci in wall of uterus	Death by endocarditis
Prochownick ⁶⁶	Molar pregnancy; sepsis; blood culture negative; uterus contained streptococci in abundance		Hysterectomy		Not stated
Robinson, B. ⁶⁷	Septic abortion	2 Weeks	Abdominal hysterectomy and double salpingo-oophorectomy	Uterus very large; multiple pelvic abscesses	Recovery
Rosenberg ⁶⁸		2 Weeks	Vaginal hysterectomy		Recovery
Rubaska ⁷⁰	Tetanus		Hysterectomy		Death
Salus ⁷¹	Osteomalacia, septic		Supravaginal amputation; extra-peritoneal treatment of stump	Peritonitis	Death in 6 days
Schultze ⁷³	Delivery at 7th month; temp. 40°c. 2d day after operation	4 Days	Supravaginal amputation; extra-peritoneal method	Pus in cervical lymph spaces; uterus bisected with placenta incarcerated in one horn	Recovery
Schwarz ⁷³	Rachitic; septic; term	At delivery	Supravaginal amputation		Recovery
Siedentopf ⁷⁴	Narrow vagina	At delivery	Supravaginal amputation		Recovery
Sippel ^{75, 76, 77}	Advanced sepsis		Suprapubic amputation; extra-peritoneal treatment of stump	Infection limited to uterine cavity; retained placental fragments; perforation of uterine wall imminent	Not stated
Sippel ^{75, 76, 77}	Post-partial hemorrhage; manual extraction of placenta	12th Day	Supravaginal amputation; extra-peritoneal treatment of stump	Uterine cavity septic and wall soft	Recovery
Skeda ⁷⁸	Contracted pelvis; septic	At delivery	Supravaginal amputation		Recovery
Smith ⁷⁹	Term; retained placental fragments	5 Days	Hysterectomy; extra-peritoneal method	Pus in uterine sinuses; appendages not diseased	Recovery
Stahl ⁸⁰	Term; septic myomatous uterus; retained membranes; fibroma softening; 2 weeks after labor	2 Weeks	Supravaginal amputation; fibroma enucleated from stump; stump removed five days later	Uterine phlebitis	Recovery

TABLE OF CASES—Continued

OPERATOR	CLINICAL DATA	PERIOD AFTER DELIVERY	OPERATION	PATHOLOGIC FINDINGS	RESULT
Stimson	Term; metritis		Vaginal hysterectomy	Beginning peritonitis	Death
Stone ⁴¹	Induced abortion; metritis; general sepsis	2 Weeks	Total abdominal hysterectomy with salpingo-oophorectomy	Uterus necrotic; many thrombi in the vessels of broad ligament	Death from pneumonia
Tissier ⁴²	Abortion; septic fibroids		Supravaginal amputation; extra-peritoneal method		Recovery
Tuffier ⁴³	Abortion; ovum necrotic	Several days	Vaginal hysterectomy		Recovery; phlebitis
Tuffier ⁴⁴ and Champetier	Abortion; placental polyp removed with curette		Vaginal hysterectomy		Death in 12 hours
Tuffier ⁴⁵ and Bonnaries	Antepartum hemorrhage at term	9 Days	Vaginal hysterectomy	Retained placental fragments	Death in 12 hours
Vineberg ⁴⁶	Term; uterus large and boggy; albuminuria; temp., 100°; pulse, 160	8th Day	Abdominal hysterectomy	Both broad ligaments infiltrated; endometrium covered with fetid greenish exudate; small millary abscesses in uterine wall containing streptococci	Death suddenly 30 hours after operation
Vineberg ⁴⁷	Term; anterior vaginal wall, including urethra, badly lacerated; signs of general peritonitis; temp., 105°; pulse, 160	4th Day	Abdominal hysterectomy; artificial vesico-vaginal fistula	General peritonitis; streptococcus in peritoneal fluid	Death in 12 hours in shock
Vineberg ⁴⁸	Term; placenta previa	28th Day	Vaginal hysterectomy	Necrotic placental fragments	Recovery

Vineberg ⁴⁰	Abortion at 3d month	Necrotic portions of uterus excised; wound cauterized with pure carbolic acid	Left ovary large and adherent to posterior surface of left cornu and fundus; encysted pus; small necrotic area in uterus	Recovery; subsequent childbirth
Vineberg ⁴⁷	Term; retained placenta; abdomen distended; temp., 105.5°; pulse, 154	Total abdominal hysterectomy	Body and fundus of uterus soft; lower segment firm; cervical canal tightly closed; portion of placental tissue firmly adherent in left cornu; other pelvic structures not involved	Recovery
Vineberg ⁴⁷	Term; septic at delivery; cervix torn; moderately septic till 8th day, then chills; temp., 103°; pulse, 120	Total abdominal hysterectomy	Parietal peritonitis; turbid fluid in peritoneal cavity; great distention of intestines; uterine wall thick, soft, friable	Recovery
Vineberg ⁴⁷	Term; forceps delivery; fundus sagged down in Douglas' sac; uterus large and flabby; temp., 106°; pulse, 150	Combined abdominal and vaginal hysterectomy	Uterus soft, flabby; part of muscular wall had been scraped away by curette; external surface studded with small abscesses	Recovery; pneumonia
Von Weiss ⁴¹	Placenta previa centralis removed manually; retained fragments; acute anemia and shock; sepsis; streptococci in lochia	Vaginal hysterectomy	Diffuse peritonitis	Death the following day
Walko ⁴²	Tetanus			Death
Zipperlen ⁴⁴	Chronic sepsis with metastases 11 Weeks	Abdominal hysterectomy	Beginning peritonitis	Death

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HYDROPS TUBAE PROFLUENS.

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This condition has been described variously as hydrorrhea ovarilis intermittens, salpingitis profluens, intermitting ovarian hydrocele, hydrops tubæ profluens, as well as by other names.

Reed says, in his *Gynecology*, that "this is a comparatively rare condition, only isolated instances having been reported from even the largest clinics." Other writers express similar opinions. Owing to the infrequency of the disease I believe the two cases which I have seen should be reported, even though I have not been able to verify the diagnosis by operation.

Case I. Mrs. M., age 39 years, American; above the medium size, well developed, and good family history. Menstruated first when 13 years and six months old; regular, and periods normal; married at 28; one child two years later. Labor prolonged and severe; was finally delivered with forceps. Recovery tedious. She had pelvic cellulitis and phlegmasia dolens, and it was over four months before she went out of the house, although her illness was during the summer.

The child lived only a few weeks. I first saw the patient seven years ago. She had been in poor health ever since the birth of her child, now two years and a half. She was suffering at this time from endometritis, accompanied by pain and tenderness in both ovarian regions. The uterus was in normal position, but somewhat enlarged. She had a thick, tough, tenacious discharge, which at times was thinner, more profuse and often tinged with blood. From three to four days before her periods she had gushes of a thin watery fluid that did not stain the napkin. This occurred from one to three times a day, and as near as could be estimated, she lost from six to eight drachms at each discharge, four to six ounces in all. The menstrual period which followed was normal, the same thing occurring again the next month. The patient said all these troubles followed the birth of her child; before that, she had nothing of the kind. A short time after I first saw her I dilated and

curetting the uterus and mopped it out with pure carbolic acid. The thick and bloody discharge stopped, and in a few weeks she was well except the watery discharge.

This was somewhat lessened at first, but soon became as bad as before the curetting, and has remained so ever since. Some months she is better, but others she is worse. This was the condition before the curettage. At the time of the operation I made a thorough examination of the pelvic organ while she was under the anesthetic, and as before stated, the uterus was in normal position, but somewhat enlarged. The left tube and ovary normal. The right tube appeared to be enlarged and somewhat distended. This is the only time I ever examined her under anesthesia, and it was 12 days before the expected menstrual period. I have examined her many times since. Just before the watery discharge occurred I have usually been able to detect a small elastic mass on the right side in the ovarian region. I have not always succeeded, however, in finding the mass when the examination was made at this time. At other times in the month I have not been able to detect anything of this character. Sometimes it seemed that the right tube was broader and folded upon itself; at least, that is the way it felt. For some time after the curetting I applied various remedies to the uterus, used electricity and general tonics, but without any benefit. For the past four years she has had no treatment whatever, her condition remaining just about as it was soon after the curetting. Her trouble is not serious, so she declines operation, which has not been urged—merely suggested.

Case II. Miss L., age 26; American; is rather above the average size, and well developed. For the past four years has taught school; before that was a pupil at school. Had been very constipated for eight or ten years; the past four years usually going three or four days, and occasionally a week without a movement of the bowels. Has had a great deal of headache; otherwise healthy. She began to menstruate at 14; regular; flow normal, and only occasionally during the past six years slight pain for the first day or so. Has never had leucorrhea. About ten days before each menstrual period for the past three years she has experienced a sense of fulness and discomfort in the abdomen, most pronounced on the left side. These symptoms gradually increased until usually the third day before menstruating. She would suddenly have a profuse watery discharge which would wet through two or three large napkins that she wore at this time, her underclothes, and often her dress. She always knew for an instant before the discharge occurred that it was coming, but the warning was

not sufficiently early to allow her to avoid wetting her clothes, even if she was where she could do so. There was no color and usually no odor to this discharge. Sometimes there was only one discharge, but oftener there would be one or more for each of two or three days in succession. The patient estimated that she usually lost a quart or more before each period. The sense of fulness would disappear, and she would have no further trouble until the next month, when the same thing occurred again. I first saw the patient early last June, a few days after her menstrual period. Examination showed a perfectly normal uterus, and nothing unusual could be detected in either ovarian region. The examination was without anesthesia. I gave the patient a tonic, a laxative, some advice in regard to her diet and habits, and strongly insisted upon the necessity of a free movement of the bowels every day. I requested her to report again just before her next menstrual period. She lived 25 miles from the city and was unable to do so, but wrote me after the period that her bowels had been regular, and for the first time in over three years she had menstruated without any watery discharge preceding it. This was a very happy surprise to the patient as well as to me. I have seen her occasionally since, but have not changed the treatment except I stopped the tonic. Before the October period she allowed her bowels to become constipated and had a return of the watery discharge, although not as much as formerly. This is the only time her bowels have been constipated, and the only period preceded by the discharge since last June. Twice besides this she has had a feeling of fulness on the left side, but not very pronounced. I still have the case under observation, and am watching it with a great deal of interest.

I feel quite sure that the cause of the disease in the first case was due to childbirth, and the complications that followed. In the second case I think it due to the long period of persistent constipation.

Anything that I might say upon the pathology of those two cases would be mere supposition, and the time allowed this paper is too limited to enter into the consideration of the pathology of this condition in general. Yet, I might briefly state that I believe the abdominal end of the falliopian tube on the right side of Case 1, and on the left side of Case 2, were completely occluded by the inflammatory process, and that the uterine ends were temporarily closed chiefly by hypertrophy of the muscular walls of the uterine end of the tubes and the thickening of the epithelial lining.

As a result of the inflammatory process an excessive amount of serous fluid was secreted and retained in the distended tube until the

pressure became so great that the inner end of the tube opened and the fluid was drained through the uterus. Some "investigators have attributed this condition to a stricture of the tube which, like the kinked garden hose, is only overcome by the gradual increase in pressure behind the point of obstruction."

I would refer to the list of authors appended for what little further information there is upon this subject as far as I have any knowledge.

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VERSION OR FORCEPS, WHICH?*

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The subject of forceps *versus* version is to this day an uncertain and debatable one. Debatable in the sense that men of equal merit and experience are not all in agreement as to which of the two operations in question is to be elected in those cases which can be truly called the border-line ones. In fact, if we are not mistaken, the tendency seems in favor of the forceps—that is, the true high application—as against the performance of a version. In order to anticipate your thoughts as to our position in this matter we wish again to place ourselves on record as being unqualifiedly and absolutely in favor of version in all of these cases with but few exceptions. These we shall enter into more fully later on. In short, we can state that in cases in which the head is above the brim version is our operation of election and that we never countenance the application of the forceps in such cases. We do not advocate the true high forceps application.

Before entering into this subject more minutely we must ask what is meant by the high forceps operation? We have always held that the high forceps operation necessitated the application of the instrument to the head which was above the brim either freely movable or at least fixed at or above the brim. Many hold that this is not the true interpretation of the term. This is simply for the reason that they recognize only two varieties of forceps application: the low and the high. All seizures of the head that are not low and in those cases in which the head is not well down on the pelvic floor are called the high application. No matter where the head is fixed, so long as it is not well low down in the pelvic cavity or on the perineum, the application of the forceps constitutes a high operation. In our classification of the various forceps operations we have always taken cognizance of three forceps positions of the head which we clinically define according to the anatomical relation of the head to the bony as well as to the soft structures of the genital tract.

1. The high forceps application; where the head is entirely above the brim, freely movable or not as the case may be, or where the head

*Read before the New York Obstetrical Society, Jan., 1903.

is engaged by its smaller segment whether or not movable. Such a position of the head, when the forceps is applied, constitutes the only true high forceps application that we are aware of. In this matter we are in full agreement with the entire German school which under these conditions claims that the head is not "Zangen Gerecht;" an expression which we cannot literally give in English, but liberally interpreted means that the forceps use is not a correct procedure under these conditions.

2. Medium forceps application; where the head is well engaged and yet not on the pelvic floor; in other words, where the greater segment of the head is still above the ischial spines.

3. The low application: the use of the instruments when the head is on the perineum or where the greater segment of the head is below the ischial spines. This classification is not an arbitrary one but both anatomical and clinical.

Were this arrangement of the head positions to be followed out, we feel that the uncertainty of what is what in the various operations in the use of the forceps would become very much simpler and more concise. We feel that the indiscriminate use of the term high forceps is due to the fact that this anatomical classification is seldom considered; consequently, when the average practitioner calls a given case one of a high forceps application very often he has simply done what we have called a medium operation. Were as many high forceps operations actually performed as are reported by the average man, we feel that the loss to life and structure would simply be appalling, since when we are called upon to do a true high forceps operation we have always felt that we are about to undertake probably as serious and difficult measure as confronts us in the entire field of obstetric surgery. We are afraid of the operation because of its dangers to life and tissue, and condemn it for this and other reasons; the most important of which is that, in an overwhelming majority of cases, the woman can be delivered by an operation that is safer to both mother and child and one that is easier of application and much surer of success and that operation is the alternate one, name version.

When they are compared, version gives far better results not only to the mother but to the child than the true high forceps operation when version is skillfully done. More of this later.

Whether the predilection for the choice of the high forceps with other men is due to their greater experience with this measure or not, I do not know; or again, whether they from their experience feel that, of the two, the operation of their choice, the forceps, is safer for

both mother and child, this is again a question which I cannot answer. From the standpoint of experience and safety I have always leaned towards version and away from forceps where it was at all possible. For other reasons than those of which I shall attempt to convince you, that version from my experience is the method to be elected. I feel that the choice is one of greater skill in one direction or the other similar to the question that arose the other day in one of our prominent societies as to the scope of vaginal section. One of the gentlemen, in the discussion, said but little but that little meant much when he said that "you who are skilled in abdominal operations will get the better results by this route and those of you who are expert vaginal operators will have the better results by this route." Thus, with many men who cannot give anatomical and clinical facts to substantiate their methods of action, the question of personal experience will enter largely into the consideration of the treatment of the case. A combination of both these factors has led me to form my conclusions in the care of these border-line cases.

I do not sanction the application of the forceps to the head above the brim except for one sole indication. This is when rupture of the uterus exists or is impending, or, generally speaking, when we are dealing with a tetanized organ from which the waters have long escaped. In all other cases I decidedly prefer the performance of an elective version, and this for fear of causing a rupture in the threatened and tetanized cases or increasing the tear in those already ruptured. Yet it must be remembered that in the most of these cases we are dealing with prolonged, fruitless and severe labors and the child has often suffered so severely as to have been almost or already sacrificed. Under these conditions an elective perforation should always have preference. In spite of claims made to the contrary by eminent teachers in the last few years, I still claim that the destructive instruments are not by any means obsolete even in the face of such modern teaching; these instruments have still a large field for application; it should be made a rule that a perforation is in order in all cases in which the child is known to have been lost or in those cases in which it is positively determined that the fetus is suffering profoundly, no matter what its position in the pelvis except when the head lies so extremely low in the pelvis that forceps application is easy, and safe to the mother. What can possibly be the object in doing a difficult high forceps or a trying version on a fetus that is dead, or upon one that is suffering so severely that its chances are very, very slim as to its being born alive, is more than I can figure out. . You surely do the child no good but are possibly doing

the mother much harm, which can positively be averted by lessening the bulk of the unborn fetus.

Continuing along these lines of discussion, our further and most important reasons for choosing version as compared to forceps are that we all admit that failure of the presenting head to engage means always, or practically so, an abnormality either of the presenting part or of the pelvis. Under such conditions we have three abnormal factors to be thought of:

1. A malposition of the presenting part.

2. A pelvis that is relatively or absolutely contracted. By a relative contraction is meant a pelvis that is large enough to permit of the passage of an average sized child, yet is too small to allow of complete engagement and passage of an overgrown fetus or large sized head.

3. The condition in which the pelvis is estimated as at or about the normal in which the head of the fetus is entirely too large for successful engagement and passage. In our experience, minor pelvic or relative pelvic contractions are not uncommon and the unfortunate part of the whole circumstance is that we have no positive way of determining their existence before or even at the onset of labor. But a graver state of affairs exists in that, when present, they are often not recognized until that time when the severest lesions have been effected. For this reason it has always seemed to us that an early exploration of the pelvis to search for the cause of the non-engagement would not be bad practice; and this we have always endeavored to follow in order to anticipate a possible dangerous complication later on. This is along the lines of teaching in modern midwifery; it should be elective and early and merely an investigation, not necessarily an operation. Some of my hearers might call this meddlesome midwifery; we call it scientific obstetrics. In the cases just mentioned, the mechanism is different than that which takes place in normal cases. Instead of engaging obliquely with fair flexion they come down transversely in a condition of hyper-flexion. Since, in my experience, most pelvic contractions are antero-posterior ones with compensatory increase in the transverse diameters, it would appear that Nature conforms with what seems to be an ideal attempt on her part to overcome the dystocia. This in most cases is fulfilled; the case then goes on to a practically normal delivery. But in some, at the critical moment, Nature's attempts are exhausted and the woman fails to deliver herself. Now if the forceps is applied in relation to the sides of the pelvis, pressure is exerted from side to side upon the fetal head, which in my experience is not compensated for by an overlapping of the bones, and thus, were this

to be true, would not increase the bi-parietal diameter of the head which I am aware is the belief and observation of many prominent writers (the most prominent of whom is Milne Murray of obstetric fame). According to direct observation, the pressure from side to side causes an increase in the bi-parietal diameter, which conforms to the contracted antero-posterior diameter of the pelvic inlet, and in this fashion, increases the pelvic contraction both relatively and absolutely in this direction. For this reason, version is elected in all cases with the exceptions already noted above, when the head is above the pelvic brim. Under the above conditions when the version is done the after coming head descending as it should transversely, pressure is exercised upon the bi-parietal bosses by the pelvic contraction in the anterior posterior diameter, diminishing their diameter where the greatest contraction is; and thus we get a compensatory side-to-side enlargement of the head, which conforms to the enlarged transverse pelvic diameter. This, as a principal reason, explains the superiority and greater safety for the child of version over the true high forceps operation in cases where the head is above the brim especially where we are dealing with women whose pelves are of the minor contraction type.

In the performance of the version special care must be taken that the head, in the passage through the pelvis, is guided by its largest diameter through the largest diameter of the pelvis and not *vice versa*; and further, the most important factor which absolutely insures the success, in order to gain a living child, is to certify to complete and permanent flexion of the after-coming fetal head during the entire time it is passing through the pelvic tract. This cannot be done by any means except by firm and intelligent fundal and supra-pubic pressure maintained as soon as the head begins to descend. If this be not absolutely and strictly followed, and the child dragged through the canal merely by the forcible efforts in pulling on the legs, the head will very likely become extended, the arms liberated and inevitably and surely will the child's life be sacrificed. Less traction on the legs (for they ought only be our guide in directing the course of the body) must be combined with firm pressure from above and this will almost always insure success. In short more of the "*vis a tergo*" and less of the "*vis a fronte*."

From the standpoint of therapeutics you will all admit the superiority of version over the high forceps application; and why? In the case of urgent danger to either the mother or child, we are told that a version holds preference over forceps because of the rapidity by which the fetus can be extracted and thus it is a life saving measure for it; and

again, by such rapidity of delivery we can certainly do more effective work in overcoming a threatening danger to the mother. This is the advice given, certainly always when the head is above the brim, and it is the advice frequently given when the head is well engaged. We present such vital indications as those arising in a placenta previa, accidental hemorrhages, eclampsia and many others. Surely if such be the measures advocated under these conditions when urgent danger threatens, why do not such methods of operating hold good under other conditions such as we have tried to make clear above? If the premises I take are correct in one instance they certainly must be so in the other. This to my mind is a very forcible argument against the arguments of those who act differently from what we directly advise, and should show the inconsistency of their beliefs.

In those cases, fortunately rare, in which the head is above the brim and in which we from our experience do not admit of a version either because of the utter impossibility of its performance because of a completely spastic uterus or of great danger because of a present or a threatened uterine rupture, the line of treatment must be one of forceps application if at all possible. Always make the attempt when the fetus is alive; never, from a conservative standpoint, when the child is suffering profoundly; and certainly never when the fetus beyond a doubt is dead. Under the latter conditions the deliberate use of the perforator should always be given the preference.

If the child be in good condition we claim that the ideal forceps to-day, especially for the purpose before us, is the axis traction forceps, our preference being for that of Tarnier. We have used the American modifications but find they do not answer the purpose as well as the French instrument. This is because of the shortness of the traction handle; and again, a much stronger element not in its favor is the very impracticable lock which joins the traction rods to the handle. It is not as readily adjustable as the French lock and not nearly as easy to handle. To recommend the use of any axis traction instrument to the man who has only the necessity for the use of any forceps once in a great while would be wrong as well as dangerous, for we have always felt that the danger from its use is such as to make it an instrument eminently fitted for the expert only. For this reason, talking as I do to men well qualified in the obstetric art, I highly and earnestly recommend the intelligent skill of the true axis traction forceps. In all the years that we have used the instruments in private and in hospital practice we have never had a mishap, and the more we have used it

and seen it used the greater becomes our enthusiasm. It is life saving and strength saving.

In all these cases we must at least presuppose that the failure of the head to engage means an abnormality of some kind or other. If an impossible position be diagnosed, it goes without saying that the position or vicious presentation must be corrected before operative interference by the forceps be instituted. At least this is to be done if at all possible.

In cases of minor or even major pelvic contractions, whether of the relative or the absolute type, we have had in the past year the most gratifying and successful results from utilizing the Walcher position. In the case of contraction of a minor type a well-sustained extension position will make an otherwise difficult forceps delivery one of greater ease. But the hanging must be a complete one, and this can only be certified to by the tendency of the patient and her constant danger of falling from the table. A well-applied sling will prevent this. Where, as it occasionally happens, this position gives no results by the patient being placed and held in the constant Walcher, the following maneuver has in several instances made the delivery possible. The forceps are applied in the usual fashion with the patient in the ordinary obstetric position. At the moment that the first traction is made the patient is suddenly thrown into the Walcher while the efforts at extraction are continued. The rationale of this method and its success seem to depend upon the forced and exaggerated extension by suddenly causing the limbs to fall and as a result of this sudden fall a greater hyper-extension is produced than is possible by the sustained Walcher. In two trials that now come to mind, both cases were not to be delivered by any means known to us; not even by the sustained extension position. Suddenly throwing the patient into the Walcher, gave us the most surprising and happy result in that the two patients were delivered of living children. The one delivered by version had lost all her previous children in labor because of a contraction down to three and one half inches. Cesarean section was advised at the time of labor, but this was refused. As the child was very large (weight was over 8 lbs.) an absolutely bad prognosis was given. The version was strictly an elective one, in an intact fruit sac and in the Walcher, but in spite of both this position and firm pressure from above the head could not be extracted. Rapidly placing the patient in a flexed position the legs were suddenly thrown into the extension posture with the result that with a sharp snap the head was rapidly delivered and the fetus was born alive.

947 Madison Ave.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Stated Meeting, Dec. 19, 1902.

The *President*, DR. CHARLES S. BACON, in the Chair.

SARCOMA OF THE OVARY.

DR. THOMAS J. WATKINS exhibited a round-celled sarcoma of the ovary. The point of special interest was the presence of ascites. The specimen was removed from a woman, 50 years of age.

A CASE OF SYMPHYSEOTOMY.

DR. M. L. HARRIS reported a case of symphyseotomy. The patient was 35 years of age. Normal menstrual history; general health good; married April 25, 1900. First confinement, Jan. 26, 1901. Prolapsed cord; dead baby. Craniotomy was necessary in order to effect delivery. Patient recovered. She became pregnant for the second time in December, 1901. As the time for confinement approached, she entered the Passavant Hospital, under the service of Dr. Hooper. Examination showed abdomen firm, not pendulous. Position of fetus, L. O. transverse; movements active. Measurements: pelvis and spine, 27 centimeters; crests, 28.5 centimeters; bis. trochanteric, 31 centimeters; Bauglelocque, 16.8 centimeters; symphysis narrow. Conjugata vera: true, 8 centimeters; false, 7.5 centimeters. Sacrum: double promontory. Sacrum sharply curved; pelvic type; generally contracted, rachitic. Laceration of perineum of first degree; estimated weight of fetus seven to eight pounds; bi-parietal estimated at 8.5 centimeters; occipito-frontalis estimated at 10.5 centimeters.

In view of the patient's first labor and craniotomy having been done, and considering the measurements that were made of the pelvis, operation was necessary to effect delivery of a living child, and as the essayist was consulted concerning some operative procedure, he thought it a proper case for symphyseotomy, advised that operation, and it was done, in accordance with a method described by the author several years ago in an inaugural thesis presented before the Society.

DR. JOSEPH B. DE LEE had performed two symphyseotomies: both mothers and both children were saved, and all were alive at present. Both women have since borne children. He only practiced this operation, however, in exceptional cases. The dangers of the operation are hemorrhage and sepsis.

DR. A. GOLDSPOHN inquired as to the experience of the members, particularly those who favor Cesarean section, in regard to whether they have any difficulty with inertia of the uterus in debilitated worn-out subjects. He did a symphyseotomy once in a worn-out woman, and said he would be afraid to do a Cesarean section in such a case, but if it were the only operative procedure he would do it. He prefers, however, to do a symphyseotomy in such a case, especially if the case terminated successfully for both mother and child.

DR. RUDOLPH W. HOLMES does not think American obstetricians appreciate the necessity of having a perfectly clean case as much as European obstetricians. He said in the European clinics, Schauta, Leopold, Zweifel, and others will not do a Cesarean section if any of the assistants has made a vaginal examination previously, for the reason that they claim the woman is essentially septic. The woman must enter the hospital during pregnancy, be examined, the indications mapped out, and she must not be interfered with through the vagina, and then, when labor begins, or just before the estimated time for it, Cesarean section is done. He said these men have very favorable results. Cesarean section, in his opinion, ought never to be performed if any attempt has been made to deliver the child through the vagina.

DR. CARL BECK saw a pubiotomy performed in Northern Italy, and with the Gigli saw it is difficult to perform this operation without lacerating some of the tissues. He said the gait of some patients following pubiotomy had changed very materially, due largely to the method used.

DR. M. L. HARRIS, in closing the discussion, said there was one argument in favor of symphyseotomy which he did not mention, namely, the frequency with which living children are born naturally after the symphysis has once been divided. In the first case he operated on the woman who had borne two or three living children since.

He had heard a great many say that Cesarean section is as simple an operation as symphyseotomy, but he thinks that symphyseotomy is infinitely simpler than Cesarean section. The former, when properly done, is a simple operation, attended with very little hemorrhage, with very little danger of infection from the wound, and should have little or no mortality.

THREE CASES OF RUPTURE OF THE UTERUS DURING LABOR.

DR. JOSEPH B. DE LEE reported these cases and then considered the treatment based on ten cases. He stated that rupture of this organ during labor is not as rare an accident as is generally believed. He thinks the statistics given in text-books are unreliable. In 4,420 consecutive labor cases in the service of the Chicago Lying-In Hospital Dispensary, there have been only two deaths, and these were due to rupture of the uterus during labor. The author has seen nine cases of rupture of the uterus *sub partu*, and one other occurred in his service during an absence. Three of the cases were reported and deductions were drawn from a review of the ten.

Of 10 cases of rupture of the uterus, only three occurred in the practice of the writer, the rest being seen in consultation or were mid-wife cases. The three cases of the author recovered without any complications, and two of these are known to be well.

A sharp distinction between complete and incomplete ruptures should be made, the latter being tears that extend to, but not through, the peritoneum. The prognosis in incomplete tears is quite good, most of the women recovering while in complete ruptures the majority of patients die, whatever be the mode of treatment.

The most successful method of dealing with incomplete ruptures is the tamponnade of the rent. Gauze is lightly packed into the cavity under the peritoneum, extreme care being taken not to injure this delicate covering. If the hemorrhage is profuse, the gauze packing will probably not stop it, even if strong counter-pressure from the abdomen is made. It is usually impossible to control hemorrhage from below, and in these cases the abdomen must be opened and the broad ligaments and vessels clamped from above.

In the treatment of complete rupture of the uterus, the author mentioned six methods to choose from:

1. Delivery of the child from below, and expectancy; ice-bag on abdomen, ergot, opium,—*i.e.*, symptomatic treatment.
2. Delivery of the child from below, tamponnade of the rent and the uterus; then the same as No. 1.
3. Delivery of child from below, sewing up rent as far as possible, and tamponnade of the remainder.
4. Vaginal delivery, followed by extirpation of the uterus from below.
5. Laparotomy, removal of child and placenta; suture of uterus.

6. Laparotomy, removal of child, etc. Partial or complete extirpation of the uterus.

The first four methods presuppose the possibility of delivering the child from below. This is not always possible, or it may be inadvisable because of the danger of increasing the uterine lacerations. In cases of hemorrhage uncontrollable from below, and in cases of highly contracted pelves, the laparotomy may become necessary. What to do with the uterus when the child, etc. have been removed, depends on the conditions. If the case has been treated in a hospital and aseptically, the uterus may be closed with sutures or drained from below. If there is any suspicion of sepsis, the whole uterus should be removed, the peritoneum closed, and the subperitoneal space drained *per vaginam*. It is a question if the peritoneal cavity should be drained.

Rupture of the uterus is an accident that occurs almost always at the home, and it is a complication that should, if by any means possible, be treated where it occurs. No case of threatening rupture of the uterus should be transported from place to place, and if the patient is to be removed from bed to table, great care and gentleness are necessary. One of the cases referred to died as the result of uterine rupture that occurred during transportation by ambulance over rough pavements.

Of the four methods of treatment in which the child is delivered from below, the author believes that the one offering the best results is the partial suture and drainage of the peritoneal cavity and the site of rupture. Even in septic cases simple drainage offers much hope, but here vaginal extirpation of the uterus is coming into vogue, and when the hemorrhage is slight, the latter operation may be practised.

DR. J. CLARENCE WEBSTER has seen a number of cases of rupture of the uterus, almost all of them having been cases which had been in the hands of midwives. He has never seen a case of extensive rupture in which abdominal section was done, associated with complete or partial entrance of the fetus into the peritoneal cavity, that was saved. Every one of them died of sepsis. He had seen several cases of rupture of the uterus in hospital practice. As far as he can remember, all subperitoneal ruptures were treated by simple tamponnade, followed by recovery of the patient.

DR. FRANK E. PIERCE saw a case of rupture into the peritoneal cavity in a foreign clinic, the child having passed into that cavity. The patient was in the country at the time of the rupture, was transported to the hospital, and three hours later a laparotomy was done, both child and placenta having been extracted. The patient recovered.

DR. J. B. DE LEE, in closing the discussion, said he had very little to add, except to say that the impression might be carried away that complete rupture of the uterus is necessarily fatal. The case cited by Dr. Pierce shows that they are not necessarily fatal, although the majority of them do terminate that way. Cases are reported which have recovered from complete rupture of the uterus, with the expulsion of the child into the peritoneal cavity.

RUDOLPH W. HOLMES, *Editor.*

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Stated Meeting, January 16, 1903.

The *President*, DR. CHARLES S. BACON, in the Chair.

BROAD LIGAMENT CYST.

DR. REUBEN PETERSON, of Ann Arbor, Mich., exhibited several specimens. The first was from a patient, forty-seven years of age, who had been married twenty-eight years, and was the mother of four children. Patient was admitted to hospital Dec. 9th last. Since last July she presented symptoms of malignant disease. In examining the woman under anesthesia he found closely connected with the uterus on the left side a large tumor reaching nearly to the umbilicus. He found the appendages adherent. He did a section, although he had intended to remove the tumor through the vagina. He removed the uterus, and found the tumor was not solid, but cystic, and that it was a broad ligament cyst.

Interest was chiefly centered in the specimen, which was one of squamous cell carcinoma, starting in the cervix, with secondaries in both tubes. Over on the right side was a pus tube, with the ovary on that side involved in the secondary growth. In order to remove the extensive growth, he resorted to the Trendelenburg position. Patient died three hours after operation with symptoms of pulmonary embolus.

OLD EXTRAUTERINE PREGNANCY.

The second specimen was removed from a woman, thirty-three years of age, who had been married seventeen years. In this case he did a

laparotomy and found that he had to deal with an old extrauterine gestation. The interesting point was the relation of the sac to the rectum, which was densely adherent to the lower part of the rectum.

UNRUPTURED EXTRAUTERINE PREGNANCY.

The next specimen was exhibited to show how difficult it is to tell whether the sac has ruptured or not. This woman had skipped two menstrual periods. On examination he found what he considered an unruptured extrauterine pregnancy on the left side, but after removing the specimen a minute opening was found in the sac.

CARCINOMA OF THE URETHRA.

This specimen was removed from a woman, fifty-four years of age. On examination malignant disease was found to involve the upper part of the labia majora and the labia minora, and the clitoria. He removed the specimen by an extensive incision. There was no evidence of involvement of the inguinal glands.

DOUBLE HYDROSALPINX.

The patient from whom this specimen was removed was twenty-seven years of age. On opening the abdomen he came upon a blue walled tumor, extending very deep into the pelvis on the right side as high as the umbilicus. The growth was cystic. There were only a few adhesions about it. He introduced a small trocar and withdrew nearly 1,000 c.c. of fluid of the consistency of pea soup. It was not until he began to enucleate the growth that he realized what it was, and found it was two tubes joined together. There was a free opening between the tubes. The case proved to be one of double hydrosalpinx. He removed both ovaries at the same time.

THE CONDITION OF THE PELVIC LYMPHATICS IN CARCINOMA OF THE UTERUS.

DR. EMIL RIES read a paper on this subject which will be published in AMERICAN GYNECOLOGY.

BALL PESSARY.

DR. RIES also showed a ball pessary which was introduced by a midwife and was used by a woman for prolapse of the uterus for four years.

The ball was approximately eight inches in circumference. The interesting point was that the woman had used it for four years without causing ulceration of the vagina. Patient kept herself clean with douches and baths. The vagina was very much relaxed. The woman removed the ball from time to time, washed it, then reintroduced it. Pessaries recommended by physicians failed to keep the uterus in place.

PRIMARY CANCER OF THE URETHRA IN THE FEMALE; REPORT OF A CASE TOGETHER WITH A CRITICAL REVIEW OF THE LITERATURE REGARDING THIS RARE FORM OF CANCER.

DR. J. F. PERCY, of Galesburg, Ill., read this paper which is the result of the investigation in the original of every recorded case of primary cancer of the urethra in the female since 1828.

The author gave a statistical list of sixteen cases. One of these, his own, and two others before unpublished gathered by personal correspondence with surgeons in different parts of the country. Investigation shows that many of the cases passing current in the literature as primary are of the secondary or peri-urethral variety. These have been omitted from the author's list. Primary and secondary cancer of the female urethra are both rare, but the former very much more so than the latter.

Some writers have tried to solve the reasons for the infrequency of these growths. This is a difficult question and its elucidation has not been aided by the explanations so far attempted.

Attention was called to the fact that in malignancy of the urinary tract the kidney is most frequently involved and that at a period antedating the tenth year.

In order to estimate accurately how frequently primary cancer of the urethra occurs, it is necessary that all cases should be observed in the earliest stages of development and before any other structures than the urethra are involved. It is only in this way that anything of definite and permanent value will come for their accurate study.

A case observed by the author under favorable circumstances for its classification among the primary urethral growths was recorded. At the time of the operation the growth was twisted free from its attachments. This brought with it nearly two-thirds of the urethral mucous membrane, showing the intimate relationship of the tumor to the urethra.

The pathologic report of epithelioma of the "transitional celled type" was made by Professor William H. Welch, of Baltimore.

The diagnosis of primary carcinoma of the urethra is not an easy problem. In every abnormality of the female urethra, one of four possible conditions should be thought of as involving the correct diagnosis. These are, in the order of their importance,—caruncle, syphilis, cancer and lupus. Many cases of apparently malignant growths will disappear under active antispecific treatment while others that are not malignant will not. Cases of this latter class were given, and a reference to the literature which deals with them was made.

CASE OF CARCINOMA OF THE URETHRA.

DR. LESTER E. FRANKENTHAL reported an interesting case of what he believed was carcinoma of the urethra, although he had not made any microscopic sections of the specimen.

DR. M. L. HARRIS said he had personally seen and operated upon one case of primary carcinoma of the female urethra. He had also had the opportunity of seeing a case of primary carcinoma of the male urethra.

As to the diagnosis, the most important point was the tendency of the carcinoma to infiltrate the deeper tissues. This was not observed in cases of caruncle of the urethra, which was frequently considered in the differential diagnosis, which was of a polypoid nature and did not infiltrate the tissues. In his case, which occurred in a woman, sixty-seven years of age, there was marked infiltration of the periurethral tissues. The disease involved nearly the entire extent of the urethra. He did the Witzel operation, and obtained a good result.

DR. EMIL RIES thought Dr. Percy's case of carcinoma of the urethra was clear and typical of its kind. He believed that the glands should be removed in these cases because otherwise there was no certainty of effecting a cure.

A CASE OF INVERSION OF THE UTERUS OF SIXTEEN MONTHS' STANDING; REPLACEMENT BY ANTERIOR COLPOTOMY AND ANTERIOR UTEROTOMY; RECOVERY.

DR. REUBEN PETERSON, of Ann Arbor, Michigan, read a paper with this title.

The patient was an American, aged 26. and married three years. Her family and personal histories were negative. Her menstruation first appeared at the age of twelve, and up to the time of her present trouble was entirely normal. Her first confinement occurred about fifteen months before her entrance to the hospital. It was rather an easy

labor, and was terminated by forceps, the instruments being applied only about five minutes. The patient did not remember about the delivery of the placenta and felt nothing give way. She flowed very profusely and was given presumably ergot. She stopped flowing soon after the completion of labor, and there was no further hemorrhage until the seventeenth day, at which time she had been up and about the room for a week. Two weeks later she consulted her physician, who told her there was something wrong with the uterus. He made a number of unsuccessful attempts "to fix it."

DR. PETERSON saw the patient soon after this. Vaginal examination disclosed a typical inverted uterus, with rather a small fundus, situated about one and a half inches within the introitus. High up in the vagina could be felt the cervical lips, forming a complete collar or rim at the extremity of the uterus.

The inverted uterus was grasped with the volsella and pulled forcibly outwards and downwards. Another volsella caught the anterior vaginal mucosa in the median line just above the anterior lip of the cup and pulled it sharply upwards. Through the vaginal mucosa thus made tense a horizontal incision was made some two and a half inches in length. To avoid opening the bladder the incision was made as close to the cervix as possible. The vesico-uterine peritoneum was opened and the cervix exposed. A volsella was placed on the anterior lip to either side of the median line, and the cervix incised between. This incision was carried upwards in the anterior median line of the uterus to within one-third inch of the fundus. The inversion was now easily reduced, the fundus going upwards and each half of the divided cervix being carried through half the arc of a circle and finally meeting, so that the two halves formed a complete cervix situated downwards, not upwards. He now adopted the suggestion of Taylor, and removed a wedge-shaped piece of the bulging uterine wall on either side of the incision. This was done to enable the retracted edges to come together. The uterine incision was next closed by a continuous catgut suture. The needle was passed from the peritoneal surface down to, but not through, the uterine mucosa.

There was some gaping in one or two places, in spite of the utmost care to bring together the peritoneal edges. An unsuccessful attempt was made to close in the spaces by interrupted sutures, but the stitches tore through the uterine wall when much tension was placed upon them. A catgut suture was passed around each round ligament close to the uterus, and each end passed through the anterior vaginal wall and tied, after the fundus was returned within the pelvic cavity. This

brought the defectively sutured line of incision up against the bladder peritoneum, at the same time giving support to a fundus which had been prolapsed for months. A small strip of gauze was placed to the left of the median line between bladder and uterus, and another small gauze drain was left in the uterine cavity. The lateral vaginal incisions were brought together about the cervix after the peritoneum was sutured to the uterus, except about the opening, where the gauze drain protruded.

The author has had no experience with posterior colpotomy in replacement of an inverted uterus, but this method seems to be much inferior to the anterior incision.

The most interesting feature of the case was the sudden rise of temperature and pulse within twenty-four hours after the completion of the operation. Was this due to a sudden absorption of necrotic material from the replaced uterine mucosa? Or was it due to leakage into the pelvic cavity through the imperfectly sutured uterine incision? The author thinks the first supposition is the correct one. The symptoms were typical of a sapremia, and the condition of the patient was at no time dangerous. It was too soon for septicemic symptoms to develop from a leakage through the uterine incision. If the rise in temperature was due to absorption from leakage, improved technique in the form of removal of a larger wedge-shaped piece would remedy this defect.

Vaginal fixation of the round ligaments, he believes, is an improvement over the ordinary technique of the operation. It prolongs the operation only a few minutes, and effectively holds upwards and forwards the relaxed fundus and acts as a splint to the uterine incision by holding the latter against the bladder peritoneum.

DR. T. J. WATKINS said he had seen four or five cases of inversion of the uterus. He had assisted Dr. Frankenthal in one where the Thomas method of dilating through the abdominal incision was attempted, but they were unable to reduce the uterus, which necessitated another operation.

He thought the method pursued by Dr. Peterson was the ideal treatment for inversion of the uterus. Possibly the technique might be simplified by making an incision directly into the uterus and then splitting up towards the cervix. After the uterus was restored to its normal position the technique might be simplified by suturing the incised uterus into the vaginal incision.

DR. DE LEE thought the principal point of interest in the case of Dr. Peterson was the absence of symptoms at the time of labor.

Dr. PETERSON, in closing the discussion, said that he questioned the woman carefully in regard to the inversion. There were no symptoms except an excessive hemorrhage, which ceased, and there was very little blood lost from directly after labor until the seventeenth day.

A PLEA FOR "BLOODLESS" SURGERY IN GYNECOLOGY.

Dr. O. B. WILL, of Peoria, Ill., read a paper with this title, in which he made a plea for more frequent resort to purely manipulative measures in the treatment of many disorders of women, in contra-distinction to those associated with section in its various forms. He entered into a consideration of the method of breaking up adhesions and replacing the dislocated uterus, ovaries and tubes by manual force of pressure and counter-pressure, and retaining them in normal position by tamponing and pessaries until in some cases new adhesions take place in more advantageous locations, or until the nutritive forces of nature change the centre of structural gravity. It is contended that normal retention is due to a uniform distribution of pressure rather than by any process of suspension. Argument was made for the value of severe mechanical attrition in stimulating latent energy and redirecting the formative forces of tissue metabolism, and increasing thereby that tone and erectility so much desired to maintain physiological equilibrium.

Reference was incidentally made to the normal and natural vicissitudes to which the pelvic organs of woman are constantly subjected, and the conclusion drawn that for that reason they lend themselves particularly well to the principles of purely manipulative therapeutics. Their comparatively independent position, structure and accessibility are additional elements in favor of such application and possibilities.

Attention was called to the frequent cure of hemorrhoids by manual divulsion and contusion of the veins; the arrest of uterine hemorrhage by persistent compression and friction; the cure of vesical inflammation by similar procedure; the management of pelvic peritoneal inflammations of chronic type by attrition through the subjacent tissues; and ovarian inflammations, enlargements and neuralgias subdued by diversions of their abnormal habit through diversified compression and friction. Likewise was pointed out the supreme value of the finger in endometrial troubles (as compared with the heretofore damaging showing of the curette), associated with antiseptic douchings and the mechanical stimulation to healthy tissue formations of well-governed packings. It was held, in fact, that in all cases of lax and atonic conditions of the pelvic tissues improvement is instigated throughout by

severe manipulations followed by periods of rest and temporary retention in acceptable position. The bruising to which they are thus subjected attaches associate tissues physiologically more firmly to each other, enhancing mutual support. It was contended by the author that many if not most of the cases in which abdominal surgeons secure favorable results without finding sufficient pathology to account for the symptoms, the cure is due to the associated mechanical traumatism and its consequent metabolic changes, and that the result could just as well have been secured without section.

Another phase of "bloodless" effort was illustrated by reference to the author's experience in the use of intra-peritoneal injections by means of the hypodermic needle. He had found the use of iodoform emulsion in that way, for instance, to be quite effective in subduing peritoneal tenderness and inflammatory action in those cases of apparently non-infective type, due to irritant influences of disordered ovulation products, or similar obscure cause. Also had he found the introduction of formalin in the same way satisfactory in controlling persistent exacerbations of infective energy in sub-acute disorders of apparently infective type, situated in different localities of the pelvis. Likewise he considered the former substance as almost a specific in localized, presumably tubercular, peritonitis.

The author considered, *in fine*, that the larger proportion of pelvic disorders, exclusive of suppuration, tumors and lacerations can be more successfully managed through such combination of bloodless methods than by section. To those who decry the availability of pre-operative diagnosis he had only to say that a proper selection of cases for any method of treatment is the very essence of that surgical judgment to which all aspire, and in which lies the future trustful promise of our art. A comprehensive conception of their philosophy is involved in the proper application of any method, and the manipulative features of the art should not be left as they now are to the untrained, subordinate and unskillful. The surgeon's own intelligent skill should be brought to bear upon them. While "bloodless surgery" may not be the most appropriate designation, the term will answer well enough to call needed attention to the demands of principles that have at least earned their right to consideration.

RUDOLPH W. HOLMES, *Editor*.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL
SOCIETY.

Stated Meeting, December 9, 1902.

The *President*, DR. EGBERT H. GRANDIN, in the Chair.

CLINICAL AND PATHOLOGICAL FEATURES OF FOUR CASES OF
FIBROMYOMA UTERI.

DR. HERMAN J. BOLDT presented four specimens of fibromyoma uteri:

Case 1.—A large tumor removed through the abdomen. The patient had been suffering for several months from atypical hemorrhages, pain and enlargement of the abdomen. No trace of the tube or ovary could be found upon the left side, either by Dr. Boldt or by Dr. Brooks, who subsequently examined the specimen.

Case 2.—Abdominal hysterectomy, rather than myomectomy. Demonstrated by the pathological examination which revealed a colloid degeneration of the tumor with marked hyperplasia and cystic degeneration of the uterine mucosa. The uterus was found to be an integral part of the tumor.

Case 3.—Extensive pelvic peritonitis rendering the operation for the removal of the tumor difficult. Absence of subsequent nervous disturbances, due to the removal of only one ovary.

Case 4.—Abdominal hysterectomy, rather than vaginal extirpation of a submucous fibroid in a single woman, because of the rigidity of the vagina and perineum. Absence of subsequent nervous disturbances, because both appendages were left.

DR. J. RIDDLE GOFFE, in discussing these cases, said that he did not consider the condition of the endometrium to be a contra-indication to myomectomy unless it be the seat of a malignant growth. Dr. McCosh had recently shown the slight danger of infection from opening the uterine cavity. Dr. Goffe related a case of myomectomy for a large fibroid in which the cavity was opened, a transperitoneal curettage performed and dilatation of the cervix with gauze drainage into the vagina was followed by perfect recovery. The extent of involvement of the uterus, as a determining point in the choice of myomectomy or hysterectomy, was a question to be decided after mature deliberation, always remembering that the possibilities of myomectomy are rapidly extending.

THE POSSIBILITIES AND DISADVANTAGES OF THE VAGINAL ROUTE, ILLUSTRATED BY THREE CASES.

DR. HERMAN J. BOLDT presented the following three specimens:

Case 1.—A large dermoid, removed *per vaginam* from a patient who had complained of pain and swelling of the abdomen for several years. The tumor, which reached half-way to the umbilicus, bulged so much into the posterior fornix that the vaginal route was chosen for its removal. The adhesions were readily separated, but a pelvic exudate from contamination of the field with the contents of the tumor so delayed the convalescence that he questioned the advisability of removing such tumors by this route.

Case 2.—Tubo-ovarian abscess, removed successfully *per vaginam*, but, because of the difficulty in separating the intestinal adhesions, he thought that operations of this sort might possibly be better and more conservatively done through the abdomen.

Case 3.—Double tubo-ovarian abscess, removed through the abdomen, although he originally intended to operate through the vagina; the intestinal adhesions, as revealed by the examination under anesthesia, were so extensive that he chose the abdominal route.

POSSIBLE FIBROMA OF THE OVARY. HYSTERECTOMY. RECOVERY.

DR. H. J. BOLDT presented this tumor, to be submitted to the pathologist of the Society for examination. It was a large, solid tumor that completely filled the pelvis and extended in the abdomen to a point just above the umbilicus. Its base was situated between the layers of the broad ligament, and it was intimately related to the uterus. The tube stretched over its top and no trace of separate ovarian tissue could be found upon that side. It had grown rapidly and the patient had lost flesh.

DR. W. S. STONE recalled a specimen that he had examined, which was found to be a uterine fibroma that had become detached from the uterus and finally had grown to the ovary.

A CASE OF ACUTE GENERAL PERITONITIS. INTESTINAL OBSTRUCTION. CAUSE UNKNOWN.

DR. H. J. BOLDT related the history of a case of severe acute general peritonitis, in which an exploratory laparotomy failed to reveal the cause.

DR. J. RIDDLE GOFFE recalled a case of ptomaine poisoning, presenting a similar clinical picture.

DR. JOSEPH BRETTAUER thought that, inasmuch as no bacteriologic examination had been made, the possibility of infection from the bacillus coli communis could not be excluded.

DR. W. T. GIBB recalled a case of general peritonitis, in which a partial obliteration of the lumen of the appendix was found.

DR. ROBERT A. MURRAY spoke of the frequent occurrence, in his experience, of general peritonitis from appendices that appeared grossly to be normal.

THE SCOPE OF THE VAGINAL INCISION.

DR. ANDREW F. CURRIER presented the paper of the evening, with the above title. A few introductory remarks relating to the inception of this method of operating by Péan and his followers, and to the exaggerated estimate of its advantages by some operators, were followed by an enumeration of the different kinds of vaginal incisions: The circular, the lateral, the anterior and posterior. The circular incision is exclusively limited to those cases in which the uterus is to be removed. The anterior incision, as preferred by Dührssen and others, he considered to be less desirable than the posterior, because of the unyielding pelvic bones, the proximity of the bladder and the comparative narrowness of that portion of the vagina. The posterior incision gives the vaginal method of operating its greatest sphere of usefulness. Section of the peritoneum *per vaginam*, although unexplained, makes less impression upon the vital forces, gives better opportunity for drainage and irrigation, gives more positive evidence of secondary hemorrhage and affords an easy way for its relief by pressure, unless large vessels are involved. The two requisites in the technic are a sufficiently large incision, and a peritoneal opening that is in immediate contact with the uterus. The usefulness of the anterior incision has been demonstrated:

(1) For the cure of retroflexion of the uterus by shortening the round ligaments, by attachment of the body to supravaginal cervix or anterior vaginal wall; for the success of any of which methods the uterus must be freely movable or so slightly adherent that its attachments may be readily relieved by the fingers in the posterior fornix or by volsella forceps; it should not be greatly enlarged and the pelvis should be of average dimensions.

(2) For ligation of tubes to insure sterility in cases of tuberculosis and serious disease of the heart, liver and kidney.

(3) For myomata in the lower segment of the anterior uterine wall.

(4) Occasionally, for pyosalpinx, hydrosalpinx, ovarian tumors, inflammatory exudates, and collections of pus in the anterior segment of the pelvis.

(5) Occasionally as an aid in the diagnosis of disease of the anterior segment of the pelvis.

The posterior incision may be indicated for the following conditions:

(1) For diagnosis. It is of such invaluable aid in diagnosis, especially if the uterus and appendages are normal, not only in pelvic diseases but also in diseases of the general abdominal cavity, that there is danger of its being used in cases in which an examination under anesthesia might give sufficient information.

(2) For opening and draining of collections of pus, both apart from and inclusive of the appendages. In many instances no subsequent removal of the sacs has been necessary.

(3) For removal of tumors of the appendages, provided they are not too adherent to the intestines, without removal of the uterus unless it has been mutilated.

(4) For removal of pedunculated uterine myomata of small size.

(5) For removal of intraligamentous cysts, prolonging the incision laterally according to the method of Stratz.

(6) For release of the displaced uterus and appendages, permanent cure of which requires either an addition opening in the anterior fornix or laparotomy.

(7) For evacuation and permanent drainage of fluid accumulations from tuberculosis, liver and kidney diseases.

(8) For some of the exigencies of parturition and the puerperal state; cystic tumors obstructing delivery; rupture of the uterus; puerperal septicemia; not for ectopic gestation.

DISCUSSION.

DR. W. M. POLK spoke of the difficulties of this method of operating and of the necessity of familiarity with its technic. He deprecated it as a way of stopping hemorrhage.

DR. H. L. COLLYER approved of opening abscesses *per vaginam* and of subsequently removing the sacs from above. He does not operate upon a retroflexed uterus by this route.

DR. J. RIDDLE GOFFE thinks the consensus of opinion of most men is that in large pelvic abscesses and in acute conditions the vaginal route is the one of choice, and its use for diagnosis, as for example, in suspected ectopic pregnancy, is sufficient evidence that the vaginal in-

cision is a safer and more desirable procedure for all cases if it is possible. He uses it in almost any condition that is found in the true pelvis. He prefers, however, except for the purpose of releasing the adherent uterus and appendages, the anterior incision, as the uterus and appendages are more accessible. He also considers that the vaginal incision affords a more direct route to the plane of cleavage at the bottom of the pelvis, to which the abdominal operator also must first go. He thinks the vaginal route the most satisfactory for shortening the round ligaments. His technic consists in first making a transverse incision anterior to the cervix, and then a longitudinal one along the entire length of the vaginal wall, dissecting the bladder from the vagina for one and a half inches. Through such an incision he has removed small fibroids from any part of the uterus. In regard to ectopic pregnancy he has never operated by this route in the presence of an active hemorrhage, but would not hesitate to remove an unruptured gestation sac or products of conception after rupture.

DR. JOSEPH E. JANVRIN would not use the vaginal route for diagnosis, for ectopic pregnancy or for the removal of cystic tumors, if there were any reasons to suspect adhesions.

DR. G. W. JARMAN would like to know more about the removal of broad ligament cysts by this route, as he had found them exceedingly difficult to remove from above if they were ruptured. He thought that vaginal work would be more generally accepted by the younger men.

DR. W. S. STONE recalled how recently most of the men were doing vaginal work extensively. The reason for the present inclination to the supra-pubic route was due possibly to the difficulties that had been presented by too small an incision in the posterior fornix.

DR. JOSEPH BRETTAUER said that as he became more familiar with vaginal work the less he used it. He would use the anterior incision for cystocele in old women by fixing the uterus to the anterior vaginal wall just beneath the urethra.

DR. H. J. BOLDT thought that the question of hemorrhage was the most important point for consideration, as it was very much harder to control from below than from above.

WILLIAM S. STONE, *Editor.*

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF
PHILADELPHIA.

Stated Meeting, January 2, 1903.

The *President*, DR. JOHN M. FISHER, in the Chair.

A CASE OF FIBROMYOMA OF THE ROUND LIGAMENT.

DR. M. M. FRANKLIN reported a case of this rare condition occurring in a patient 29 years of age. The tumor, about the size of a walnut, was situated in the right inguinal canal, just without the internal abdominal ring. Pressure on the growth caused considerable pain and nausea. The growth was excised, and the pathological findings proved it to be a fibromyoma of the round ligament.

DISCUSSION.

DR. JOHN C. DACOSTA has never had a case of fibromyoma of the round ligament, and thinks that their infrequency is readily explained by the broad ligament, one of which he believes to be the largest ever reported. It did not spring from the round ligament, but from the shiny muscular fibres at the bottom of the pelvis.

DR. WILMER KRUSEN cited some cases of neoplasms of the round ligament, other than fibromyoma. The fact that these tumors often increase in size during pregnancy and menstruation, probably indicates their relation to the uterus. The case reported by Doran, of a sixteen-pound tumor arising from the tiny ovarian ligament, shows how in the mere presence of fibrous tissue large growths may proliferate.

DR. E. E. MONTGOMERY has never seen a case of tumor of the round ligament, and thinks that their infrequency is readily explained by the fact that the round ligament is rarely subject to injury.

PRELIMINARY REPORT OF AN OPERATION FOR ABDOMINAL
PREGNANCY OF TWENTY-ONE MONTHS' DURATION.

DR. C. P. NOBLE reported the history of this case of abdominal pregnancy; as he had not received from the pathologist the report concerning the microscopical study of the specimen, he was only able to present the clinical side of the case. The patient was a multipara, 30 years of age. Her present illness dates from the early part of March, 1901, when she missed a menstrual period. Two weeks later she was

taken with a sudden pain at one o'clock in the morning. The pain was sharp, severe and lancinating in the right iliac quadrant. The attending physician diagnosed the case appendicitis, and the patient was in bed for three weeks. For six months her condition was that of a normal pregnancy. Fetal movements were felt, the abdomen progressively enlarged, the breasts increased in size, and a physician was engaged to attend her in confinement. In the last week of August, 1901, she was taken with an attack of dull, dragging pain in the lower part of the abdomen, vomiting, chills and fever, accompanied with flooding, which persisted for two weeks. Two months after the expected date of confinement she consulted a gynecological dispensary, where a diagnosis of "tumor" was made and medicine given "to dissolve it." In March, 1902, she was in bed for three weeks, attended by a woman doctor, who made a diagnosis of typhoid fever. In August, 1902, she consulted another physician on account of the persistence of the abdominal mass, a consultation was held, a diagnosis of fibroid tumor was made and the patient sent to the Kensington Hospital for Women for operation November, 1903. A presumptive diagnosis of abdominal pregnancy was made, and three days later an abdominal section was performed. The fetus occupied the left side of the abdomen extending into the pelvis, and the uterus was pushed to the right and elevated; the round ligament and tube ran over the face of the "tumor," and the sac was so thick that it was impossible to outline any of the fetal parts. A fontanelle was felt by pushing a finger under the head. The ovarian and uterine vessels on the involved side were ligated, the fetus and sac elevated out of the pelvis, and the lower end of the mass turned upward. By getting at the mesenteric vessels from below and behind it was possible to control bleeding without difficulty. The broad ligament was split down to the uterus, and the latter organ allowed to remain. Drainage was instituted through the vagina. The most interesting point in connection with the operation was the method adopted to prevent hemorrhage. A rational explanation of the conditions is that the ruptured tubal pregnancy occupied the space behind the left broad ligament, and that this space was roofed in by adhesions between the upper border of the broad ligament and the sigmoid and omentum. The fetus is in an excellent state of preservation. The patient made a very satisfactory recovery.

DISCUSSION.

DR. E. E. MONTGOMERY referred to the following two cases, which occurred in his practice. A woman in whom, fifteen months after con-

ception, he opened the abdomen and removed a fetus which had undergone maceration and decomposition. The intestines were adherent to the sac, and the latter was stitched to the abdominal wall, the woman making a slow recovery. The second case was an abdominal pregnancy of two years standing. The woman refused operation, subsequently became pregnant and was safely delivered without injury to the sac.

DR. WILMER KRUSEN referred to a woman in whom the abdomen has gradually increased in size for ten months. The day before she died a consultation was held and operation deemed inadvisable. Autopsy revealed a full-sized fetus within the abdominal cavity, which weighed ten pounds and was larger than a baby a month old. The head of the fetus was directly under the spleen.

DR. C. C. NORRIS spoke of a specimen which he had seen removed, which had been in the abdomen for nine or ten years.

DR. NOBLE (closing) believes that it is best to enucleate the whole sac, provided one can do primary ligation. In a case having its chief blood supply from the mesenteric vessels he would prefer to pack the sac with gauze and leave it.

CHARLES P. NOBLE, *Editor*.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting, January 2, 1903.

The *President*, DR. G. WYTHE COOK, in the Chair.

DR. E. A. BALLOCH presented a specimen of pyosalpinx and an unusually large cyst of morgagni. The latter was about one and one-half inches in diameter.

OBJECTIONS TO THE VAGINAL ROUTE IN THE TREATMENT OF ECTOPIC PREGNANCY.

DR. J. WESLEY BOVÉE read a paper with this title, in which he reported four cases with fatal results, due at least in part to the employment of the vaginal route. In two the vaginal route alone was employed without ligation, and death occurred from secondary hemorrhage eleven and thirteen days after operation, respectively. In the other two the vaginal route was first employed, and the hemorrhage being excessive, the abdomen was opened to control it. One of these

died in twenty-six hours and the other was kept alive five days, death finally occurring from exhaustion. His deductions were that the abdominal route is preferable to the vaginal in every operation for tubal pregnancy because

1. The field of hemorrhage can be more quickly reached by this route, taking into consideration the relative amount of time consumed in cleansing the two routes under anesthesia.

2. The condition can be more readily treated and the ligation of blood vessels more readily and certainly performed.

3. The danger from secondary hemorrhage in ectopic pregnancy is markedly less when ligation is practiced than when removal of blood clots alone is undertaken.

4. Any other important pathologic lesion requiring attention in suitable cases may be treated at the same sitting.

5. The shock as a rule will be less than if the vaginal and abdominal incisions are both made.

6. The tube can be more readily removed than by the vaginal route.

7. The abdominal route is applicable to all stages of the pregnancy, while the vaginal route cannot be employed for the latter stages.

6. The vaginal incision has no place in the treatment of unruptured tubal pregnancy, while the abdominal incision is the route *par excellence*.

DR. G. BROWN MILLER said he thought the history of the case was most important in making a diagnosis of extra-uterine pregnancy, and that with an intelligent patient from whom a good history could be obtained it is possible to make a correct diagnosis in a large majority of cases. The history of most of these cases is as follows: The patient, who has previously been regular, misses a period and perhaps thinks she is pregnant. After a week or more she commences to have a bloody discharge which is not unlike her regular monthly flow, and she likewise has pain in the pelvis, usually on one side. If, on examination, an enlarged Fallopian tube or a mass to one side or behind the uterus is found, the chances are likely in favor of the condition being one of ectopic pregnancy. There may or may not be the signs of pregnancy, depending largely on the age of the fetus. The symptom of hemorrhage may likewise be present or absent, depending on whether rupture or abortion has occurred and the amount of blood lost. In the main points he agreed with the essayist in regard to the vaginal route in operating for this condition, but believed there were certain cases where the vaginal route was preferable. These are of old encysted, suppurating or decomposing hematomas, which can be readily reached through

the posterior vaginal incision. In most of these cases there is great liability of infecting the peritoneal cavity when the foul mass is removed through the celiotomy incision. The vaginal operation is safer so far as infection, shock and ileus are concerned, and in these cases there is little liability to hemorrhage. In a few selected cases of retro-uterine hematoma, where the escape of blood occurred months before, there is reason to know the condition is a quiescent one, it is safe to evacuate the blood clots through the vagina. Dührssen and other operators are accustomed to dealing with nearly all cases of pelvic disease in women through the vaginal incision. They advocate the removal of small unruptured tubal pregnancy through an incision anterior to the uterus. In the hands of those accustomed to operating by this method the procedure is probably a safe one, but he prefers the abdominal route in such cases. In all cases, with the exceptions mentioned, he believes the abdominal route is best, as it offers the following advantages:

1. One can gain a better knowledge of the pathologic condition not only in the pelvis but of other abdominal organs.
2. There is much less danger of hemorrhage, and if it should occur it is more easily controlled.
3. In large sacs and fetuses of considerable size it is nearly always necessary to make the abdominal incision. This is especially true in live fetuses near the full term, in which case the danger of hemorrhage is very great.

Where there is doubt as to which route is preferable he thought it best to make the celiotomy incision first, and, if necessary, the vaginal afterwards.

DR. BALLOCH said he had recently had a case of ruptured tubal pregnancy with secondary hemorrhage one week after vaginal section. An abdominal section had saved the patient, as the blood was confined, although quite a quantity had been poured out. He had regretted not making the abdominal incision first.

DR. GOSMAN, U. S. Army (by invitation), said he had been impressed by the amount of time required properly to prepare the patient for vaginal section, and felt it was a great handicap in urgent cases where the abdomen had to be opened to complete the operation.

DR. SPRIGG mentioned two cases, the diagnosis of which had puzzled a number of gynecologists, and on section both had proven to be ovarian abscesses. He felt the abdominal route should be the first to be ordinarily employed.

DR. D. G. LEWIS was confident that the expectant treatment of ectopic pregnancy was even worse than the same plan in appendicitis,

and he had had occasion to regret using the vaginal route instead of the abdominal in operating for ectopic pregnancy.

DR. BOVÉE, closing the discussion, advised opening the abdomen then if the vaginal section seemed advisable, to make it. He deprecated the expectant treatment of ectopic pregnancy and suggested that the vaginal opening into a mass of blood clots in the cul-de-sac was to invite infection if part of it was allowed to remain, and hemorrhage if it was all removed.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting, January 16, 1903.

The *President*, DR. G. WYTHE COOK, in the Chair.

THE STATUS OF GYNECOLOGY.

DR. W. M. POLK, of New York City, by invitation, read a paper with the above title. In his paper he reviewed the history of the development of specialties in medicine, giving the reasons for them and the reasons for believing that specialism cannot be eliminated from the science of medicine.

HYSTERECTOMY IN PUERPERAL SEPTIC INFECTION.

DR. CHARLES JEWETT, of Brooklyn, N. Y., also by invitation, read a paper with this title, which is published in full in the current number of *AMERICAN GYNECOLOGY*.

BOOK REVIEWS.

ATLAS AND EPITOME OF ABDOMINAL HERNIAS. By DR. GEORGE SULTAN, First Assistant in the Surgical Clinic in Gottingen, Prussia. Authorized translation from the German, by William B. Coley, M. D., Clinical Lecturer on Surgery, Columbia University (College of Physicians and Surgeons); Surgeon to the General Memorial Hospital; Assistant Surgeon to the Hospital for Ruptured and Crippled, New York City. Published by W. B. Saunders & Co., Philadelphia and London, 1902.

This little book of two hundred and seventy pages, which made ... appearance but a few months ago, is of particular value at this time when this special line of surgery is being so thoroughly studied. Being translated and edited by such an expert as Dr. Coley, it would seem to be assured of wide popularity. It contains 119 illustrations, 36 of them in colors, which adds materially to the splendid descriptive pictures of the text. Fifty-five pages are devoted to consideration of the accidents of hernia, and 132 pages to special hernias. The remainder is devoted to the general subject and gives expert opinions in reference to abdominal hernias. The treatment of the subject of hernia through the foramen of Winslow is splendid and especially interesting at the present time, when the anatomy and diseases of this region are being so carefully studied in connection with the subject of biliary calculi and other conditions of the ductus communis choledochus and diseases of the pancreas.

J. WESLEY BOVÉE.

DISEASES OF THE PANCREAS AND THEIR SURGICAL TREATMENT. By A. W. MAYO ROBSON, F. R. C. S., Senior Surgeon to Leeds General Infirmary, etc.; and B. G. A. MOYNIHAN, M. S.; London, F. R. C. S., Assistant Surgeon Leeds General Infirmary, etc. Illustrated. Published by W. B. Saunders & Co., Philadelphia and London, 1902.

This work of 280 pages is probably the most comprehensive work on pancreatic affections in existence, and is dedicated "To the Surgeons of America in cordial recognition of their work." It contains 25 illustrations. It is divided into ten chapters, the first being devoted to anatomy of the pancreas, etc., and very carefully written; the second and third to experimental work on and injuries of the pancreas. Chap-

ters 4, 5, 6 and 7—130 pages—are devoted to pancreatitis in its different forms. Calculi, cysts and new growths of the organ consume the remainder of the book—about 100 pages. Throughout the work an attempt has been made not only to state the work already done, but to suggest plans for future work in dealing with diseased conditions of this little understood organ. That advance in some fields of surgery is too rapid for text-books ever to be abreast of the times is here exemplified. This work, which has just come before the profession does not contain matters regarding the pancreas that have been learned within the last few months. The anatomy, physiology and abnormalities of the pancreas are very thoroughly treated.

Pancreatitis.—In discussing the forms of pancreatitis objection is made to the interchangeable employment of hemorrhagic pancreatitis and the acute form of the disease. The authors prefer to classify pancreatitis as acute, sub-acute and chronic, and acknowledge Fitz's pathological sub-division of the acute form into hemorrhagic, suppurative and gangrenous. In the treatment of acute pancreatitis they urgently recommend early exploration and perhaps drainage—most frequently posterior, as the very best. In sub-acute pancreatitis they also recommend early surgical treatment. When pus is present drainage in the costo-vertebral angle or aspiration and anterior drainage are advocated. Numerous case histories are given to support this method of treatment.

Calculi.—The authors suggest the great probability of previous changes in the pancreatic secretion to account for carbonates of calcium, magnesium and sodium found along with the phosphates in pancreatic calculi.

Cysts.—The classification of pancreatic cysts is: 1. Retention; 2. Proliferation, which embraces cystic adenoma and cystic epithelioma; 3. Hydatid; 4. Congenital cystic disease; 5. Hemorrhagic; and 6, For convenience, pseudocysts. This classification is very comprehensive, and is justified by our present knowledge of pancreatic cysts. Chronic pancreatitis is believed always to precede pancreatic cysts. The authors take exception to the statement made by some writers that hemorrhagic cysts originate from blood accumulations, but believe they are due to hemorrhage into cysts. The diagnosis is dwelt upon at length, and the differentiation between these cysts and those of the ovary, liver, suprarenal capsule, mesentery, omentum, posterior wall of the stomach, spleen and peritoneum and gall bladder disease, and kidney fluid tumors is entered into with minuteness of detail. The treatment suggested is, 1, aspiration; 2, evacuation and drainage, with stitching cyst to ab-

dominal wall; and 3. extirpation, partial or complete. Except as a preliminary step to operation, aspiration is condemned, as leakage from the puncture wound or rupture of the sac beginning at the point of puncture during refilling of the cyst is extremely likely and ends fatally. Evacuation and drainage is strongly urged. From a study of the eighty-four recorded cases, drainage is apparently a necessity. Five of the eighty-four patients died from operation. Of the fifteen complete extirpations thirteen recovered, and of the seventeen partial extirpations but three recovered. The authors recommend extirpation in only the exceptionally favorable cases.

Tumors.—The differential diagnosis between cancer of the pancreas and other conditions is very precisely given. The authors have little to offer in the treatment of tumors of the pancreas, suggesting that operation usually ends fatally, and they cite a number of cases to prove their position. The language, arrangement of subjects and type of the book are excellent.

J. WESLEY BOVÉE.

CANCER OF THE UTERUS. A Clinical Monograph on its Diagnosis and Treatment, With the After Results in Seventy-three Cases Treated by Radical Operation. By ARTHUR H. N. LEWERS, M. D., Lond., F. R. C. P., London; Obstetric Physician to the London Hospital, etc. With 51 original illustrations and 3 colored plates. 8vo., pp. 321. P. Blakiston's Son & Co., Philadelphia, 1902.

This is a valuable and readable monograph, and will amply repay study from the clinical side. The author's facts strongly emphasize the importance of carefully investigating the cause of irregular bleeding in women, especially in those past their early years of womanhood; and also give great support to the teaching that all cancers of the uterus should be removed by hysterectomy at an early period of their development. Adopting five years' freedom from recurrence as a standard of cure, the author had 18 per cent of cures in 33 high amputations for cancer of the cervix, and 14 per cent of cures in 28 vaginal hysterectomies for cancer of the cervix. In 11 cases of vaginal hysterectomy for carcinoma of the corpus uteri there were 5 (45 per cent) free from recurrence at the end of four years.

Certain special features of the work are: The insistence upon the relation between frequent child-bearing and the development of cancer of the cervix; suggestions to facilitate the early diagnosis of cancer of the uterus; the great thoroughness and care with which the case histories have been prepared, and the cases have been followed; and the

uniformity with which the specimens have been submitted to microscopic study, thus rendering the data supplied of far greater value than is the rule in medical works.

Upon the pathologic side the book is open to criticism, both favorable and unfavorable. From the standpoint of classification it is unfortunate that the author has included sarcoma under the term "cancer of the uterus." The exposition of the pathologic nature of deciduoma malignum is not clear. On the other hand, the idea of illustrating clinical cases by the reproduction of the gross specimens, together with a report of the histologic findings, is excellent. The illustrations of the former are very accurate and exceedingly instructive. The latter, for the most part, are lacking in detail and are not well reproduced in the black and white figures. The plates are very satisfactory. This method of illustrating clinical work, especially the reports of cases, is to be recommended. It is more convincing to the critical reader than paragraphs of text. On the whole, the monograph is a valuable addition to the literature of cancer of the uterus.

CHARLES P. NOBLE.

THE DEVELOPMENT OF THE HUMAN BODY. A MANUAL OF HUMAN EMBRYOLOGY. By J. PLAYFAIR McMURRICH, A. M., Ph. D., Professor of Anatomy in the University of Michigan. With 270 illustrations, pp. 510. Philadelphia, P. Blakiston's Son & Co., 1902.

That a knowledge of embryology greatly facilitates the interpretation of the significance of adult structure, most teachers of anatomy admit; though but few of them give to it adequate time and attention in their instruction courses. Professor McMurrich, fully realizing its importance, has evidently written this manual that it may serve as a text book for students of medicine.

The introductory chapter consists of outline statements of the structural characteristics of a typical animal cell of the phenomena of mitosis and of the three chief modes of animal reproduction. Part I deals with the origin, impregnation and development of the ovum as a whole. In Chapter I, spermatogenesis, oögenesis and fertilization are clearly explained; in Chapter II, segmentation of the fertilized ovum, and the formation and significance of the primal germ layers are made clear; Chapter III deals with the development of the external form and the growth of the embryo; Chapter IV, with the differentiation from the primal germ layers of those basal structures from which the tissues and organs of the body originate; and in Chapter V, which completes Part I, is explained the development of the embryonic and fetal accessory structures—such as the amnion, allantois, umbilical

cord, chorion and placenta. Part II deals with the differentiation and development of the tissues, organs, systems, and tracts, which make up the adult body, and though of necessity each is treated of separately, their interrelations are constantly kept in view. They are taken up in the following order: the integumentary, connective tissue, osseous, and muscular systems; the circulatory system; the digestive tract and its appendages; the pericardium, pleuroperitoneum, diaphragm, spleen and respiratory organs; the urogenital system and suprarenal bodies; and finally, the nerve system and organs of special sense. At the end of this part, and completing the book, is an excellent chapter on post-natal development and growth. At the end of each chapter is a well selected list of references to recent literature.

The descriptive method is used throughout the book. The author's style is that of simple, direct, concise statement in places perhaps a trifle too concise for easy reading, but this is excusable inasmuch as it is plain that the book was written for study in connection with more explanatory lectures or laboratory work. Though the attention is focused on the development of the human body, it is made clear that the gaps in the history of the human embryo must temporarily be filled by means of inference and analogy from the observed data of development of other vertebrates.

Altogether, the work forms quite a satisfactory text book, not only for students of medicine, but for all students of vertebrate, and especially mammalian morphology, and as such it will probably be widely used in this country.

The illustrations have been carefully chosen, accurately reproduced and are sufficiently numerous; the printing is excellent. A general table exhibiting the chronologic order of development would form a valuable appendix.

JOHN C. CARDWELL.

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CHARLES S. WHITE, M.D.

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4. American Journal of Obstetrics. New York.
5. American Medical Compend. Toledo, O.
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17. Archivio di Ostetricia e Ginecologia. Napoli.
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19. Atlanta Journal-Record of Medicine.
20. Australasian Medical Gazette. Sydney.
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ABSTRACTS.

W. E. BUTLER, M.D., A. D. CHAFFEE, M.D., T. W. CLEAVELAND,
M.D., REUBEN CRONSON, M.D., GEORGE GELLHORN, M.D.,
AND ADAM SCHAUF, M.D.

OBSTETRICS.

On Intraperitoneal Hemorrhage Incident to Ectopic Gestation.

CULLINGWORTH (*Journal of Obs. & Gyn. of the British Empire*, Vol. 2, No. 5), after reviewing the characteristic symptoms of rupture of the tubal sac with diffuse hemorrhage, states that he principally relies on the following symptoms in making a diagnosis, *viz*:

1. The fact that at the time of attack the patient was in her usual health.

2. Gradual increasing pallor and gradually rising pulse-rate without corresponding rise of temperature.

3. Extreme tenderness of the abdomen.

4. If a menstrual period is missed or is overdue the diagnosis is greatly facilitated.

He lays special stress on the tenderness of the abdomen and warns against thinking that all conditions of extreme tenderness must be due to inflammatory conditions.

The writer thinks that the presence of free fluid in the abdominal cavity is not easily determined, and that nothing more than a sense of boggyiness can be made out in the vaginal examination.

He thinks that a large majority of cases of pelvic hematocele are due to ectopic gestation, and that such cases are ordinarily characterized by irregular uterine hemorrhage and by attacks of pain. Of thirty cases seen during the last five years, due to ectopic pregnancy, twenty-five had both pain and hemorrhage, two had pain without hemorrhage, three had hemorrhage without pain. The uterine discharge for the most part is dark in color, moderate in amount, fairly thick in consistency, and while it lasts, steady in flow. In uterine abortion, the discharge is often very copious, fitful in its rate of flow and variable in color and consistence.

Faintness occurred in about a third of the cases; nausea in a sixth; rise of temperature in same proportion and retention of urine in two cases.

The occasional rise of temperature is especially spoken of by the writer as misleading.

The histories of two cases of pus tubes which almost exactly simulated ectopic gestation (pelvic hematocele) are given, and then he refers to twisted pedicle of an ovarian cyst which may previously have escaped attention.

Passing from the diagnosis to the etiology, he states that in the majority of cases of intraperitoneal hemorrhage the blood escapes from a rent in the center of the tube, and in the cases of pelvic hematocele there is a leakage through the fimbriated extremity allowing the formation of the hematocele.

The tube wall seldom becomes hypertrophied, the usual result being attenuation. There is at times a thickening due to an exudate, and then a layer of fibrous tissue is formed and finally this becomes weakened and ruptures.

He calls attention to the fact established recently that changes occur in the ovum itself, the result being like that which occurs in a carneous mole. This constitutes one of the varieties of hematosalpinx. This apoplexy of the ovum may result in rupture, or more frequently in trickling from the fimbriated extremity with the consequent formation of hematocele.

Hematocele, therefore, forms in the early weeks, but the sac may give way and a diffuse hemorrhage result.

The writer speaks of the dangers of leaving an hematocele to absorb, mentioning three cases which he left and which developed symptoms of septic absorption.

W. E. B.

Dilatation of the Cervix with Bossi's Dilator in a Case of Eclampsia.

H. LANGHOFF (*Centralbl. für Gynakologie*, 1902, No. 47), reports a case of eclampsia in which he employed Bossi's dilator. Patient 28 yrs. para. Had 3 attacks of convulsions when he was called and was seven months pregnant with general edema; pulse 140. During the examination she had a convulsive attack. Chloroform and ether administered. Patient deeply cyanotic; no fetal heart sounds can be distinguished. Position 2 occ. anterior. Cervix dilated for the passage of a finger. Pains every ten minutes. Membranes were ruptured and Bossi's dilator applied. When dilatation had proceeded to No. IV, the instrument was withdrawn, the caps applied and reintroduced. In three quarters of an hour dilatation was complete, the indicator pointing

to No. IX. Forceps were then applied to the fetal head and five minutes after delivery was completed.

Child was dead! Placenta followed within ten minutes. Patient recovered. A. S.

Rapid Dilatation of the Cervix with Metal Dilators.

A. MUELLER (*Centralbl. für Gynakologie*, 1902, No. 47), reports several cases in which he successfully employed a dilator of his own design which closely resembles a glove stretcher.

This instrument is very small and possesses this advantage that it can be introduced into a very contracted cervix and in from 8 to 12 minutes sufficient dilatation can be produced to permit the performance of version, while a few minutes more suffice for complete dilatation.

In a very much contracted, external os, one branch of the dilator can be introduced followed by the other branch and the instrument locked while *in situ*. Should even this be impossible, a sound or bent dressing forceps may be inserted until sufficient dilatation occurs to permit the use of the dilator. The tips of the dilator may be introduced into the external os as far as they will go, and as dilatation progresses pushed farther until the blades reach the internal os.

When dilatation has advanced so that the opening is the size of a small palm of the hand, then the fingers may be used for further dilatation if desired. Of the large dilators that have appeared, the most important are Tarnier's, Bossi's, Knapp's and very recently the speculum-shaped dilator of Kaiser. Of these, acting upon the principle that the simplest is the best, the writer recommends the dilator of Kaiser.

A. S.

For Rapid Dilatation of the Cervix after Bossi.

O. KAISER (*Centralblatt für Gynakologie*, 1902, No. 41) describes an instrument which is a modification of Bossi's cervical dilator. Some of the objectionable features of the latter are removed, that is, it is less complicated, can easily be taken apart and assembled for cleansing purposes and has eight arms instead of four. The spreading of the levers is accomplished by means of a screw, which, when in use is given a half turn every minute. In twenty-five minutes the circumference of the cervix will measure 34 cm. Caps are provided for covering the tips of the levers, which, after the cervix has been somewhat dilated, are slipped over the ends thus offering a broader surface for dilating pur-

poses. As the expanding levers dilate in the form of an octagon, instead of a square as in Bossi's dilator, there is much less danger of tearing the cervix. The dilator should be used only when immediate evacuation of the uterus is demanded, as in eclampsia. In less urgent cases the metreurynter should be employed. A. S.

Contribution to the Employment of Bossi's Dilator.

C. W. BISCHOFF (*Centralbl. für Gynakologie*, 1902, No. 47), reports five cases in which the employment of Bossi's dilator produced complete dilatation of the cervix in from 20 to 30 minutes, even with a closed cervix: A laceration of the cervix occurred in each case. A severe hemorrhage did not occur, owing probably to the fact that the wounds were contused.

The instrument should be reserved and used only when an urgent indication presents for immediate delivery with a closed or slightly dilated cervix.

For induction of premature labor the bougie and colpeurynter are safer and just as effective.

For hospital use it is a valuable addition to the armamentarium. Perhaps future modifications may overcome the objectional features of the Bossi dilator.

Case I.—20 yrs. 1-para. Eclampsia. Had 15 convulsions before the dilator was used. Craniotomy; patient died comatose 3 hours after, never regaining consciousness.

Case II.—Aged 26. 1-para. Eclampsia. Three weeks *ante terminum*. Had 5 convulsive attacks. Operation, 25 minutes; recovery.

Case III.—Aged 24. 1-para. Contracted pelvis. In labor 1½ days. No fetal heart sounds.

Dilatation to No. IX. Craniotomy. Recovery.

Case IV.—Aged 23. 1-para. Contracted pelvis. Three weeks *ante terminum*. Artificial labor induced with bougie colpeurynter, followed with Bossi's dilator. Time, 20 minutes. Cross presentation. Version. Recovery.

Case V.—Aged 21. 1-para. Pregnant in 9th month. Eclampsia. Has had 5 convulsive attacks. Dilatation required 27 minutes. Version. Recovery. A. S.

AMERICAN GYNECOLOGY

Vol. II.

MARCH, 1903.

No. 3.

A NEW METHOD OF SUTURING THE FASCIA AND LEVATOR ANI MUSCLE IN PERINEORRHAPHY; ALSO AN OPERATION FOR COMPLETE LACERATION OF THE PERINEUM DESIGNED FOR THE PURPOSE OF ELIMINATING DANGER OF INFECTION FROM THE RECTUM.

BY GEORGE H. NOBLE, M.D.,
Atlanta, Ga.

AN OPERATION FOR INCOMPLETE LACERATION OF THE PERINEUM.

The fact that so many operations have been devised for laceration of the perineum proves that repair of such injuries have not been uniformly satisfactory. Surgeons of skill recognize that something is wanting, and seek relief in modifications of their own. A few of them have called attention to the importance of suturing the fascia, more from theory than practice, I presume, for the methods proposed were not usually perfected; vague references to fascia rather than specific definitions appear in their writings, making it difficult to follow important steps in the technic of operations.

In traveling the same field I encountered some of the difficulties others have met with, and after an extended experience have been forced to the conclusion that most surgeons have failed to give the anatomy of the pelvic floor due consideration. The apparent simplicity has stripped it of interest, and yet tedious dissection is required to demonstrate its component parts. But in a brief paper like this it is not expedient to give a detailed account of the anatomical relation of the fascia and muscles, since many excellent illustrations have lately appeared in print, notably in Deaver's "Anatomy." I will, therefore, refer the reader to such works for the study of anatomy most concerned in the operation of perineorrhaphy. The fasciæ to be es-

George H. Kelle, M.D.

Specifically noted are: (1) The recto-vesical, which line the co
the levator ani muscle and, therefore, rests upon its su
back; (2) The large pelvic fascia which covers the convex



Fig. 1. In anterior lacerations (V. R.) the fascia
slight extent, but in lateral tears extending around to
triangular ligament is torn through on one
V. to L. A. and is then free to retract

surface of the muscle, and lies immediately adjacent to it; (3) The triangular ligament which embraces the layers of fascia external to the last mentioned, covering the pelvic outlet anterior to the anus. Through all of them the vagina and urethra pass. The rectum passes through the first two and is attached to the posterior border of the latter in the median line.

Some years ago, when I first began to dissect the different layers of fascia and suture them in doing perineorrhaphy, I thought its retraction of common occurrence, but after devising a systematic method of dissection, I found that retraction beyond a slight degree the exception. In anterior laceration (complete and incomplete) it does not occur, for the attachment of the fascia to the rectum is not disturbed (*Fig. 1*), but in lateral lacerations extending posteriorly to the rear of the margin of the anus, the triangular ligament is torn through on one side and is free to retract in the direction of its bony attachments. In such cases the tear extends from the vagina (*V, Fig. 1*) in the direction of the dotted line (*L. A, Fig. 1*) producing the appearance depicted in *Fig. 2*, though the skin is not torn the full extent of the laceration.

Exceptions to this rule occur when the line of separation passes through the central tendon down to the sphincter ani and then skirts around the muscle to the rear of the anus. In this instance the triangular ligament is not completely separated from the central tendon which holds it fast to the deep fascia preventing retraction.

The deep pelvic and rectovesical fasciæ do not retract, as they are held more or less in position by their attachments to the pelvis, and especially to the levator ani muscle, consequently these two layers can always be found without difficulty.

If there are reasons to believe that the triangular ligament has been severed, its lower border should be palpated by introducing the index finger into the vagina and placing the thumb on the perineum to one side of the anus (*Fig. 3*) then by rolling the tissue between them in the vertical direction its presence or absence may be noted. If it cannot be felt, insert a pair of tenaculum forceps in the side of the torn perineum opposite the anus, that is, in the part separated from it just above the external sphincter, and draw it toward the median line with a view of putting the severed portion of the ligament upon the stretch, then palpate as above described, and its lower border may be felt between the fingers. It may be isolated or exposed by blunt dissection. While holding the parts taut with the hooked forceps, expose the bulbo-cavernosus by dissecting midway

pecially noted are: (1) The recto-vesical, which line the concavity of the levator ani muscle and, therefore, rests upon its superior surface; (2) The deep pelvic fascia which covers the convex or inferior

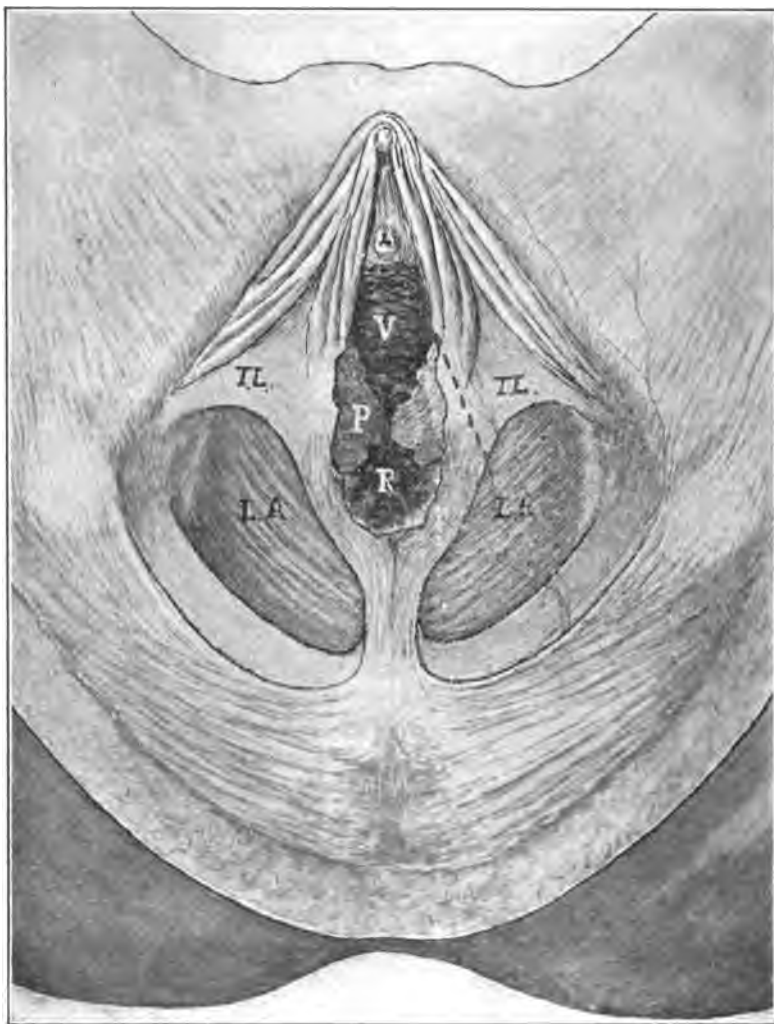


Fig. 1. In anterior lacerations (V. R.) the fascia does not retract beyond a slight extent, but in lateral tears extending around to the posterior verge of the anus the triangular ligament is torn through on one side in the direction of the dotted line V. to L. A. and is then free to retract in the direction of its bony attachments.

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between the deep pelvic fascia and the cutaneous surface where the principal layer of this ligament will be found in contact with the external side of the muscle. Or if accurate knowledge of the relative positions of the several layers of the fascia is wanting, a blunt hook may be passed behind the lower border of the triangular ligament into the space between the latter and deep fascia at a point just external

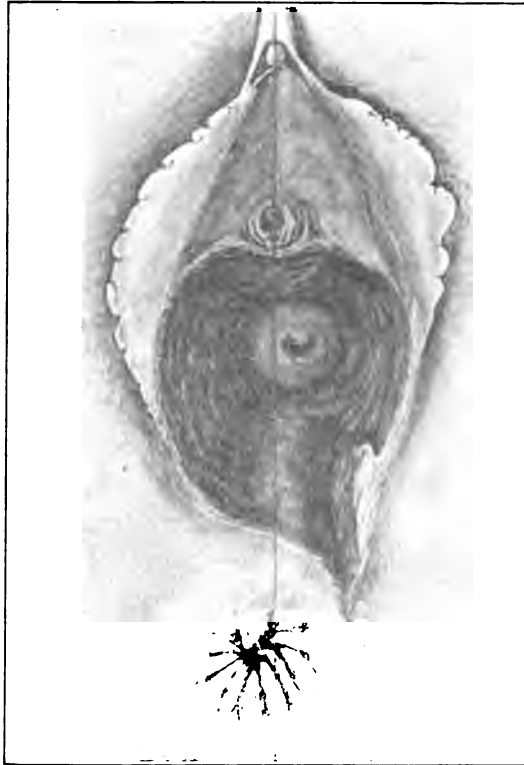


Fig. 2. Representing lateral laceration in which the triangular ligament is severed. The anus is displaced slightly to the opposite side.

to the central perineal tendon by inserting it in the fatty tissue beneath the skin with its point directed outward until buried about half an inch, next turn directly inward in the direction of the axis of the pelvic outlet until it reaches the deep fascia where it will meet with a feeling of resistance; then turn by rotating the instrument upon the axis of its handle until the point is directed toward the median line.

This will produce a little prominence on the side of the torn perineum posterior to the triangular ligament where it has been separated from



Fig. 3. Photograph. With the index finger in the vagina and thumb on the perineum by the side of the anus, the lower border of the triangular ligament may be felt by rolling the tissues between them.

the conjoined tendon of the perineum. From this point it can be traced up and down as the case may require, and its edges accurately approximated with sutures.

I will first give in a brief way the technic of the operation as I have been doing it, and then follow with a description of my recent modification of incising and suturing the levator ani muscle:

1. The perineal denudation should extend from the skin to the upper border of the levator ani muscle and from the rectal angle to the point marking the posterior commissure. The latter can be recognized by existing scars. This makes an irregular quadrilateral sur-

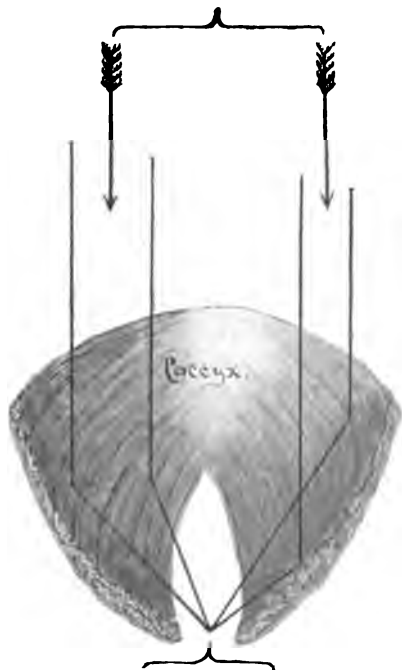


Fig. 6.—The levator ani muscle, being more or less parabolic in shape, receives the intra-abdominal force in the reverse direction to that in which a parabolic reflector casts off rays of light. The intra-abdominal pressure strikes all parts of the muscle within its concavity and is deflected to the center, showing a tendency to concentrate at a point corresponding to the perineum.

face on each side of the vagina, the anterior is shorter than the rectal border, as the cutaneous and vaginal lines converge slightly at their anterior extremities.

2. The next step is exposure of the levator ani muscle. This is done by inserting the thumb and finger in the vagina and grasping the muscle as it courses along the vaginal border of the denuded surface (*Fig. 7*). It is then seized with a pair of tenaculum forceps

drawn into the vaginal orifice and the sheath of the muscle is opened by blunt dissection (*Fig. 8*) in the direction of the fibers of the muscle. After the sheath has been opened to the upper side of the forceps for about an inch or two, the crown of the perineum, the handle of the forceps is turned upward and the dissection extended down to the rectum, deep penetration and laceration of the muscle being carefully



Fig 7. Photograph. The thumb and finger is inserted into the vagina and grasps the muscle as it courses along the vaginal border of the denuded surface.

avoided. The second pair of tenaculum forceps is then inserted within the sheath of the muscle, taking firm hold of the muscular tissue and separation of the fascia is completed by the finger, exposing a strip of muscle about three-fourths of an inch wide. The forceps are then removed and the opposite muscle exposed in the same way.

3. The vaginal margin is closed by inserting medium size catgut

sutures about three-eighths of an inch from the edge of the wound, penetrating first the vaginal mucous membrane, and next the recto-vesical fascia,* issuing from the space formed by separating the lat-



Fig. 8. The levator ani muscle is then seized with a pair of tenaculum forceps, turned into the vaginal orifice and the sheath of the muscle opened by blunt dissection in the direction of the fibers of the muscle.

ter and the levator ani muscle (*Fig. 9*). They cross to the opposite side, pass between the levator muscle and the recto-vesical fascia (3,

*Posterior layer.

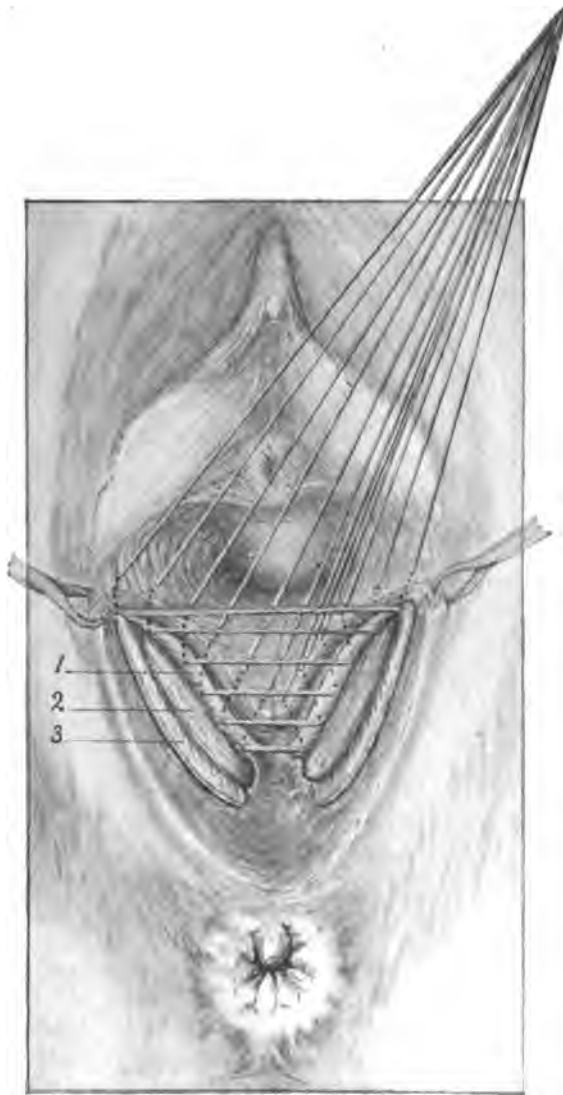


Fig. 9. The vaginal margin is closed by inserting medium-size catgut sutures about three-eighths of an inch from the edge of the wound, penetrating first the vaginal mucous membrane and next the recto-vesical fascia, issuing from the space formed by separating the latter and the levator ani muscle. They cross to the opposite side, pass between the levator ani muscle and the recto-vesical fascia 3, 1, puncturing the latter about three-eighths of an inch from the edge, and emerge upon the vaginal surface.

1, *Fig. 9*) puncturing the latter about three-eighths of an inch from the edge, and emerge upon the vaginal surface. The sutures if interrupted, are tied as they are inserted, and repeated until the fascia (1, *Fig. 9*, also *Fig. 10*) is closed as far as the crown of the perineum. When using the continuous suture I frequently tie it at the posterior commissure and leave the end long, turning it aside temporarily to be used later for closing the margin of the skin.

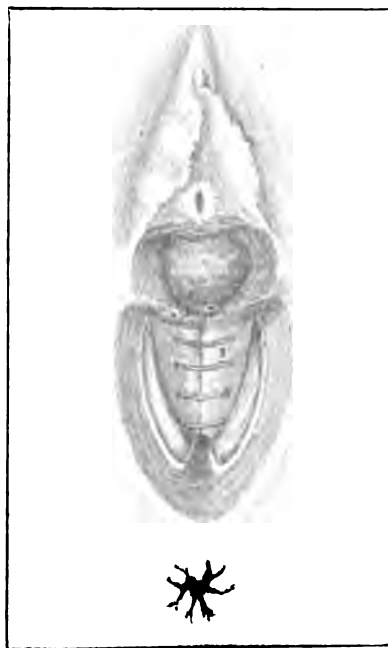


Fig. 10. The sutures, if interrupted, are tied as they are inserted and repeated until the fascia (1.) is closed as far as the crown of the perineum.

4. The edges of the levator ani muscle are approximated in the median line* by three kangaroo sutures, one just in front of the rectum, one just below the posterior commissure, and the third midway between these two (*Fig. 11*). They should transfix the muscles three-fourths of an inch back from the edge of each and embrace a large amount of tissue to prevent splitting of muscle. When tied the muscles are brought in close contact in the median line (*Fig. 12*).

5. Four kangaroo sutures are passed around the bulbo-cav-

*This step has been modified recently. See *Figs. 17, 18, and 19.*

ernosus and the conjoined tendon formed by the triangular ligament and deep fascia. They should be inserted about midway between the cutaneous surface and deep fascia, penetrating the perineum deeply and emerge between the deep fascia and the levator ani muscle about half an inch from the edge of the former. They are returned upon the opposite side of the perineum in reverse order, and emerge external to the bulbo-cavernosus at a place corresponding to the starting point (*Fig. 13*). The lower stitch should be placed close to the rectum,

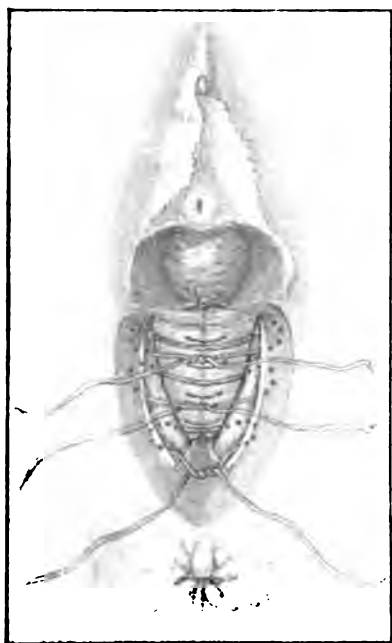


Fig. 11. The edges of the levator ani muscle are approximated in the median line by three kangaroo sutures.

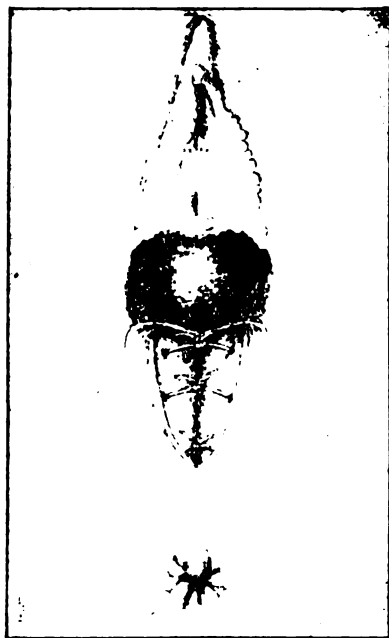


Fig. 12. When tied, the muscles are brought in close contact in the median line.

and the highest about three-eighths of an inch below the posterior commissure, and the remaining space divided by the other two. The second stitch in front of the rectum should pass through a small portion of the levator ani muscle to prevent formation of air space. When the sutures are tied the part embraced in their grasp comes in close contact and the edges of the deep fascia and the triangular ligament are brought into accurate apposition.

The last step in the operation consists in closing the skin and superficial fascia with interrupted sutures or by continuing down to the angle near the anus the whip-stitch of catgut left hanging at the crown of the perineum (*Fig. 14*).

I have been doing the operations as above detailed for the past eight years with general satisfaction, but not being sure that the levator

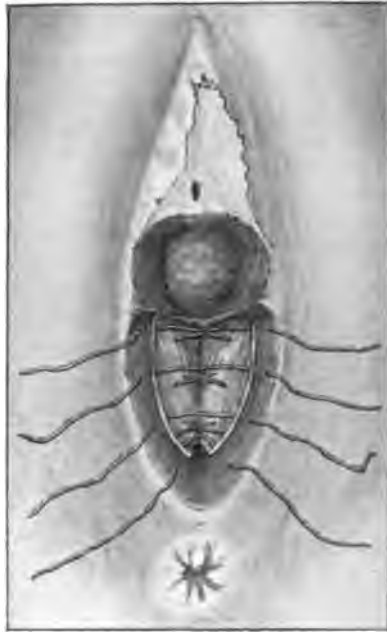


Fig. 13. Four kangaroo sutures are passed around the bulbo cavernosus and the conjoined tendon formed by the triangular ligament and deep fascia. They should be inserted about midway between the cutaneous surface and deep fascia, penetrating the perineum deeply, and emerge between the deep fascia and the levator ani muscle about half an inch from the edge of the former. They are returned upon the opposite side of the perineum in reverse order, and emerge external to the bulbo cavernosus at a place corresponding to the starting point.

ani muscle would stand the strain put upon it, and fearing that it would separate and leave a thin place in the central portion of the perineum, I have recently put into effect an idea that occurred to me a few years ago concerning the importance of the decussating fibers of the muscle and conjoined tendon. It was my desire to reproduce these as far as possible, and in this way to imitate nature in the repair of injured parts.

After finding an easy method of locating the most important layers of fascia and learning to dissect them from adjacent tissues, my mind naturally reverted to the feasibility of forming this useful bond of muscle around the posterior commissure of the vaginal orifice, securing end to end contact of the fibers, and producing a union that would not separate under the strain to which the perineum is subjected.

The technic is as follows: The edge of the levator ani muscle on the right side is drawn into the open wound by means of tenaculum

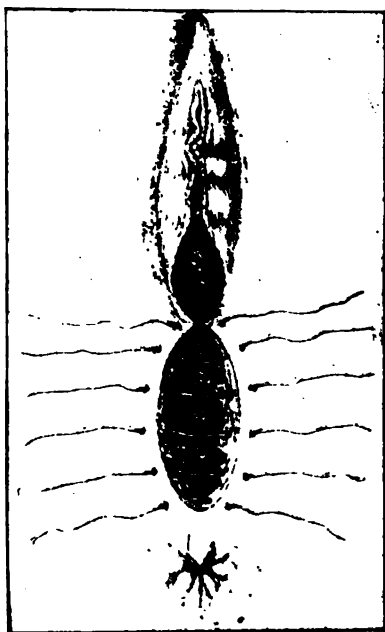


Fig. 14. The last step in the operation consists in closing the skin and superficial fascia with interrupted sutures or by continuing down to the angle near the anus the whipstitch of catgut left hanging at the crown of the perineum.

forceps, and a kangaroo tendon passed through it at a point about three-fourths of an inch back from its border and low down by the side of the rectum; the kangaroo is carried across the median line to the border of the muscle on the opposite side and passed through it in the reverse direction. On tying it the edges of the muscle approximate snugly immediately in front of the rectum. Just in front of this suture an incision three-fourths of an inch in length is made in the pubo-rectal part of the muscle, inclining downward and outward at

an angle of about forty-five degrees to the horizon (*Fig. 16*). This cuts the muscle nearly perpendicular to the course of its fibers. The opposite border of the muscle is treated in the same way. The severed ends are turned across the perineum behind the posterior commissure (*Figs. 17 and 18*) and united in the median line by one kangaroo suture

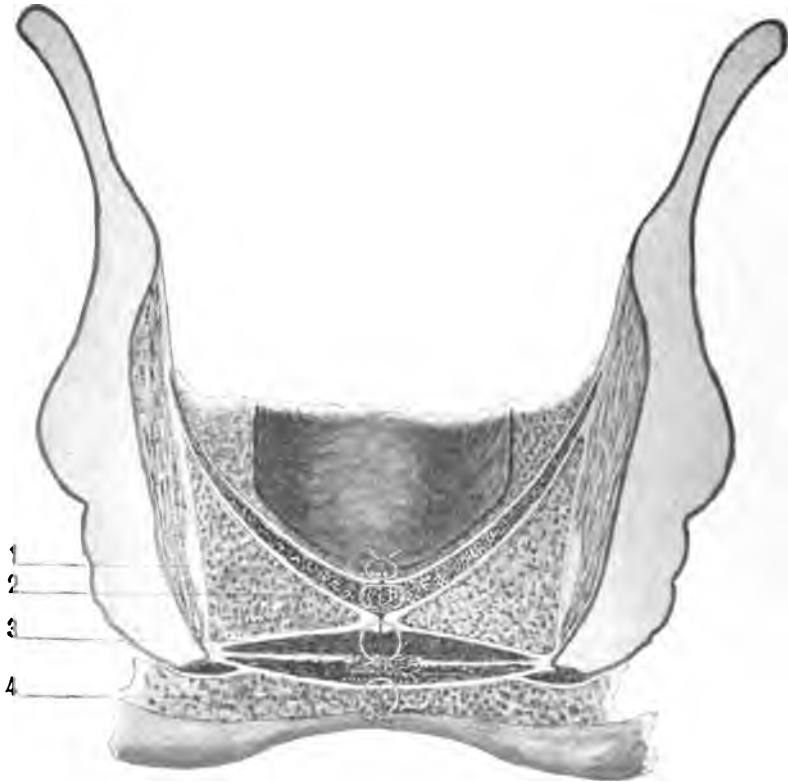


Fig. 15. No. 1 represents a suture approximating the vaginal mucous membrane and the recto-vesical fascia. No. 2 represents a suture approximating the levator ani muscle. No. 3 represents a suture approximating deep pelvic fascia, triangular ligament, deep transverse perineal muscle, bulbo-cavernosus, etc. No. 4 represents a suture approximating the skin and superficial fascia.

inserted three-fourths of an inch back and tied tight enough to keep the ends of the muscles together without pressure. Below this point a triangular pocket is formed which is effaced by passing a kangaroo suture from side to side through the pubo-coccygeal portion embracing three-fourths of an inch of the muscle (*Fig. 17*). When this suture is drawn tight it forces the two sides together, completely filling the

pocket and adding firmness to the muscular support of the floor of the pelvis (*Fig. 18*).

I am glad to say that the eight cases treated in this way show most excellent results and promise to be lasting in effect.

I have not given minute directions for denuding the perineal surface, because the conditions vary so much in different cases it is next to impossible to express in writing a clear idea of the requirements

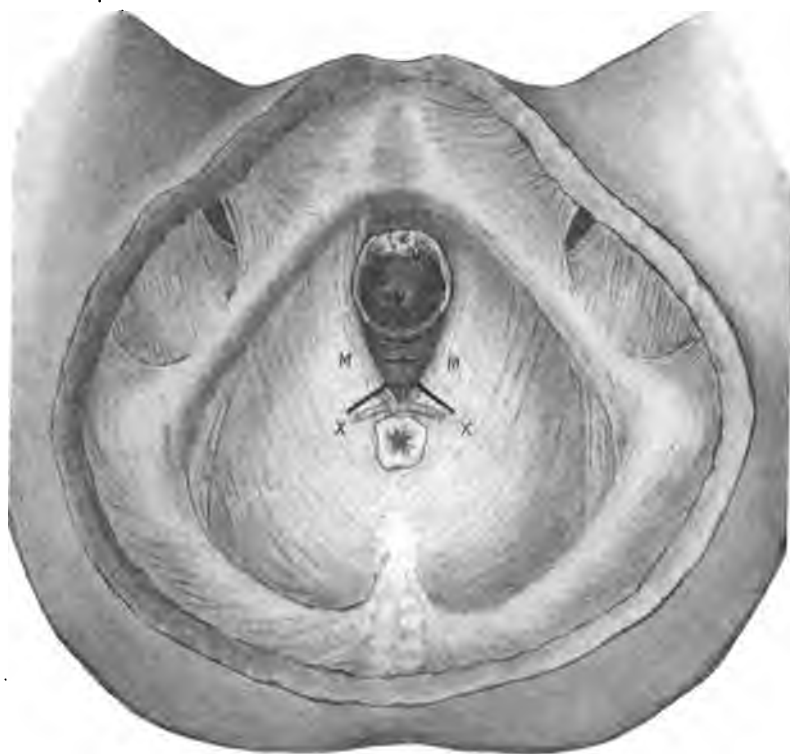


Fig. 16. Just in front of the suture an incision three-fourths of an inch in length is made in the pubo-rectal part of the muscle inclining downward and outward at an angle of about forty-five degrees to the horizon.

that are to be met. The chief points to be observed are not to pare off the skin of the vulva, nor to extend the denudation forward beyond the posterior commissure, but to remove scar tissue and mucous membrane far enough within the vagina to gain easy access to the edge of the levator ani muscle. Irregular lacerations involving the vagina and distortions caused by scar tissue must govern modifications of the above

when present, and in closing them each case must be a law unto itself. Further than this, injuries of the vagina will not be noticed, as the object of this paper is to present an operation, the main features of which pertain to the perineum proper.

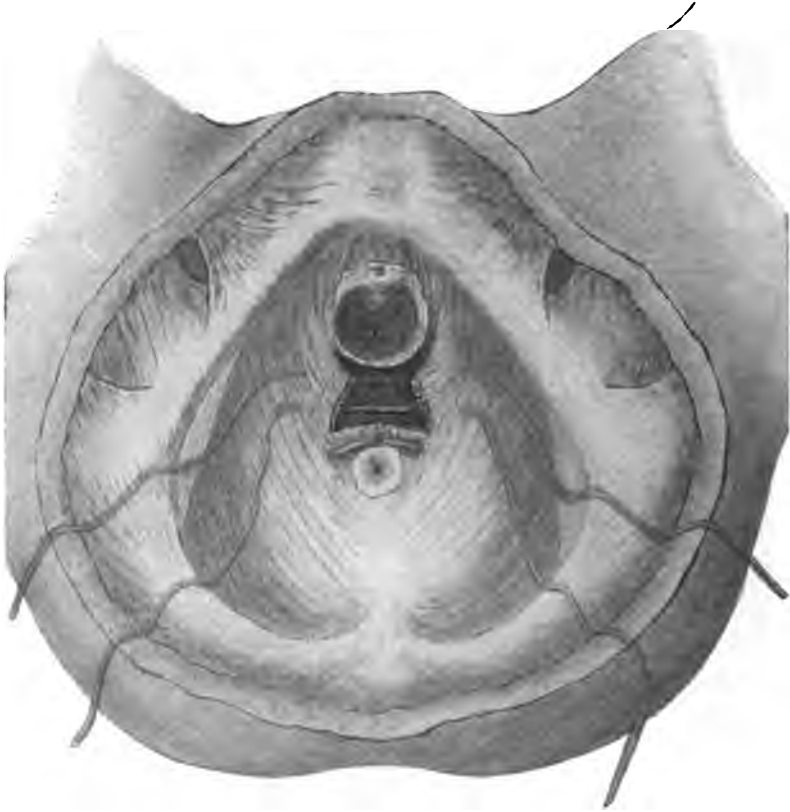


Fig 17. Showing position of kangaroo sutures used to approximate the ends of the muscle.

I am sure a decided advancement has been made in the operation by changing the method of suturing the edges of the levator ani muscle to the plan of incising and stitching together in the median line the cut ends of the pubo-rectal portion. It forms a strong loop of muscle around the vaginal orifice, giving the perineum better support and makes a connecting link between the two sides of the muscle, preventing its tendency to separate. It draws the perineum forward, closing the

vaginal orifice effectively, and prevents the inclination of the bladder and urethra to turn outward.

The execution of this step in the operation is simple and is devoid of hemorrhage. It does not increase the pain unless the sutures are tied too tight through carelessness.

Formerly I dissected the deep pelvic fascia from the deep transverse perineal muscle and sewed it with a separate row of sutures, also

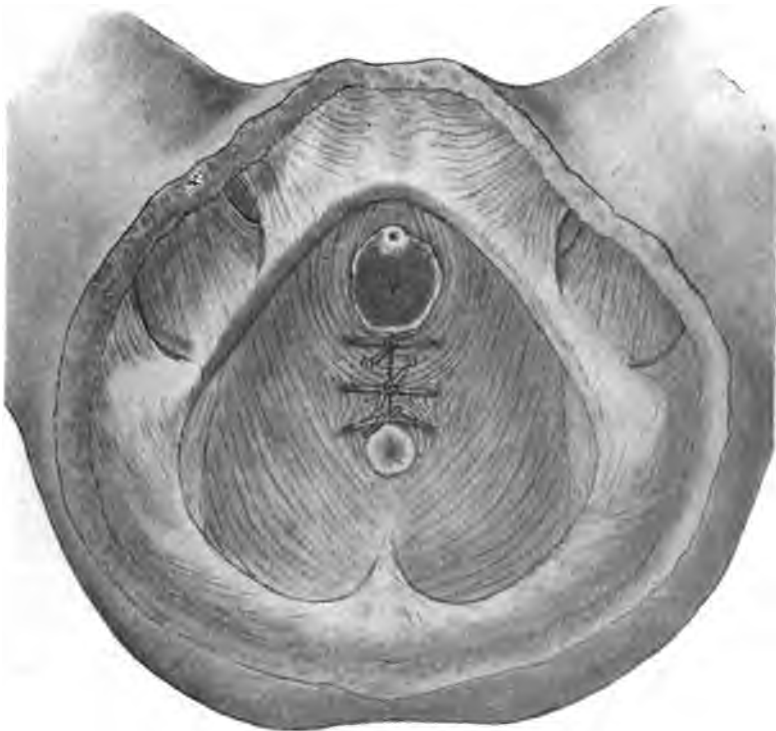


Fig. 18. The cut ends (M.) of the muscles are turned across the perineum and united in the median line, reproducing the decussating fibers.

exposed, and united the bulbo-cavernosus with an additional row of sutures, but it is not necessary and requires too many buried stitches. It would frequently show the fascia (*Fig. 19*) and muscle beautifully, but requires considerable experience to make quick and satisfactory dissection. For this reason I have changed the method of dealing with these parts to the description above, that is, to embrace the deep fascia and bulbo-cavernosus in the same sutures. If it is desirable to get

direct union of the ends of the latter muscle it can be done by exposing it in the same way we do the levator ani muscle; the place of dissection lies midway between the skin margin and deep fascia. The method of



Fig. 19. Photograph of the deep pelvic fascia united by buried sutures.

suturing need not be changed, however. I do not recommend this step as an important feature.

In the time that I have been doing this operation many cases have

been closely watched, and I am glad to say that it has stood the test of childbirth effectively, and I feel justified in making the statement that the results, both immediate and remote, are far superior to other methods I have tried.

The advantages are:

1. Greater strength contributed by union of fascia.
2. Better approximation of the muscles on either side by forming a band across the recto-vesical cleft, converting it into two openings, rectal and vaginal, in place of one.
3. The muscles do not separate and leave a thin perineum as in the case of lateral union of the muscular edges.
4. It contracts the vagina, draws the perineum forward and effects better closure of the introitus.
5. It gives better support to the base of the bladder.
6. It draws the posterior wall of the vagina forward in front of the cervix uteri, thus having a tendency to prevent forward slipping of that part of the uterus, and diminishes slightly one of the contributing factors of retroversion.

OPERATION FOR COMPLETE LACERATION OF THE PERINEUM.

My new operation for complete laceration of the perineum consists in splitting the recto-vaginal septum, dissecting the lower end of the rectum from the vagina and drawing the anterior rectal wall down through and external to the anus, converting a complete tear of the perineum into an incomplete laceration. The line of incision (black line (*Fig. 20*) starts on the external side of the sphincter dimple at a point close to one end of the sphincter muscle (*S. M., Fig. 20*), care being taken not to cut the skin at this point. It follows the edge of the sheath of the muscle, passing between it and the rectal mucosa, making the flap at this point as thick as possible. It then turns upward and forward to the cellular interspace of the recto-vaginal septum (*S., Fig. 20*), splitting it in the center, and returns on the opposite side to a place corresponding to the starting point. This makes an incision similar to the ordinary flap splitting operation, except at its extremities. The incision is best made with a pair of sharp-pointed scissors. After cutting through the cicatricial structure to the healthy tissue beneath, two pair of light compression forceps are placed on the rectal flap, some distance to either side of the center, embracing in their grasp the entire thickness of the rectal wall. The left hand should be protected with a rubber glove and the index finger passed into the rectum beyond

the angle of the laceration as a guide to prevent perforation of the rectal flap. The forceps are held with the remaining fingers of the left hand, and, as slight traction is made upon them, ridges or bands of tissue form across the line of incision (1, *Fig. 21*). These are cut as they appear. The point of the scissors should be turned slightly in the



Fig. 20. The line of incision (black line) starts on the external side of the sphincter dimple at a point close to one end of the sphincter muscle, S.m. It follows the edge of the sheath of the muscle, passing between it and the rectal mucosa, then turns upward and forward to the cellular interspace of the recto-vaginal septum, S, splitting it in the center, and returns on the opposite side to a place corresponding to the starting point.

direction of the vagina, that is, away from the rectum, to avoid liability of perforating the latter. Unless care is observed the tendency will be to cut the flap too thin* so as not to embrace the entire thickness of

*This is most likely to occur when separating the mucous membrane from the verge of the anus and sphincter muscles for the rectal flap is necessarily thinner

the rectum; this can be avoided by confining the incision to the cellular interspace.

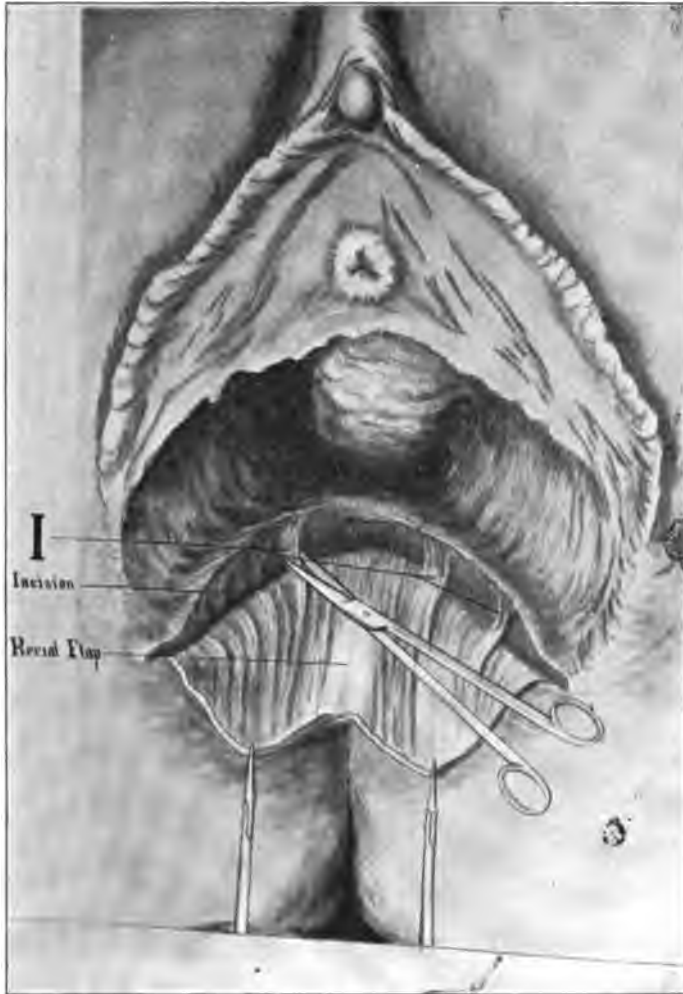


Fig. 21. When slight traction is made upon the rectal flap, ridges or bands of tissue will form across the line of incision; these are cut as they appear (I).

After reaching this stage of the operation there is no longer any in this region. It is important, therefore, to handle this portion of the flap with great care, for if it should be torn through, the accident might defeat the main feature of the operation.

necessity for the finger in the rectum. It should be withdrawn, the glove removed and the hands resterilized. The torn surfaces of the

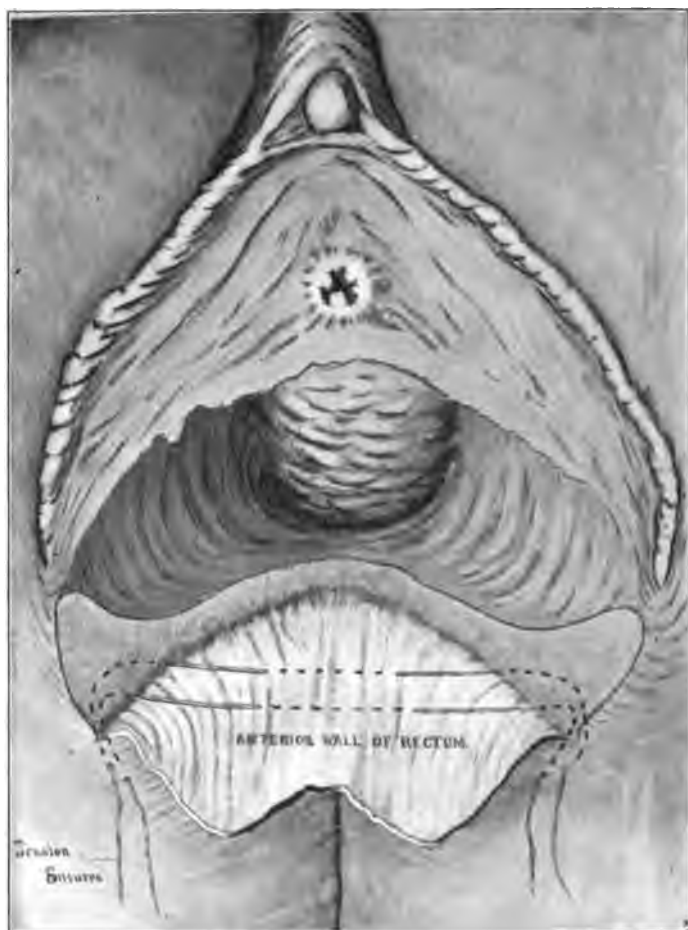


Fig. 22. Two kangaroo sutures (tension sutures, Fig. 22, and I, Fig. 23) are inserted deeply into the perineum behind one end of the sphincter muscle, pass to the opposite side, taking up in crossing the thickest part of the rectal flap, about its middle portion, without penetration of the rectal mucosa, and return to the other end of the sphincter ani, to issue at a point corresponding to the place of introduction.

perineum are next denuded and the excess of the vaginal flap cut away. Two kangaroo sutures (Fig. 22 and I, 2, Fig. 23) are inserted deeply

into the perineum behind one end of the sphincter muscle, pass to the opposite side, taking up in crossing the thickest part of the rectal flap (about its middle portion) without penetration of the rectal mucosa, and return to the other end of the sphincter ani to issue at a point cor-

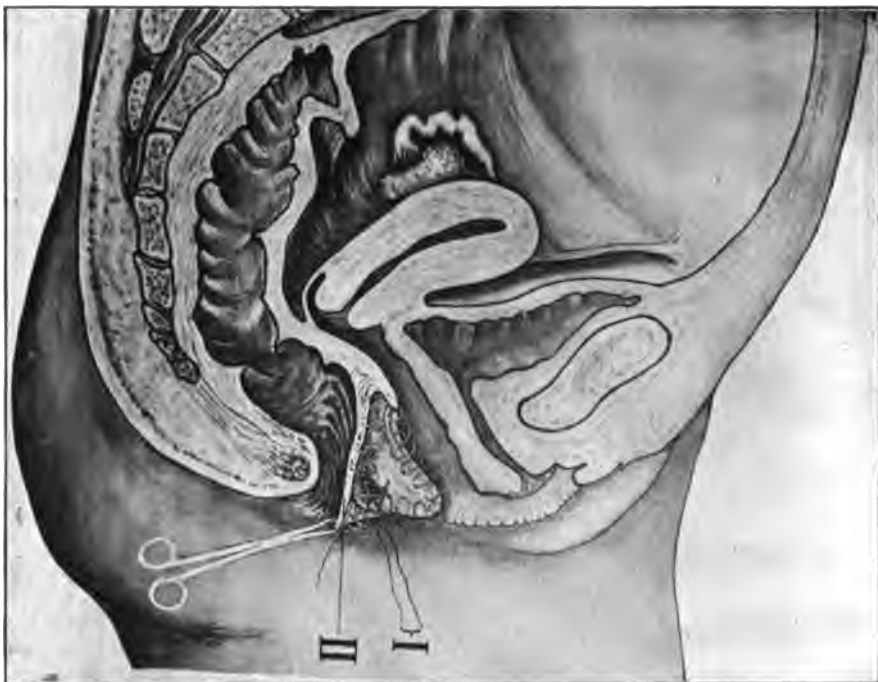


Fig. 23. Vertical section of Fig. 22, showing tension sutures, I, rectal flap, II, and whipstitch sutures closing mucous membrane and skin. This illustration represents closure with buried sutures.

responding to the place of introduction (Emmet sutures). In exceptional cases the sphincter muscle may be very much shortened or retracted, and its ends require approximation by buried sutures to secure the best immediate results. When the Emmet sutures are tied the wound is converted into the condition of a simple perineorrhaphy (1, 2, Fig. 23), and is then completed by some method employed for incomplete tear.

I like, however, to closely approximate the edges of the vaginal mucous membrane and skin with small catgut whip-stitches, continuing

necessity for the finger in the rectum. It shows
 the hands resterilized. The

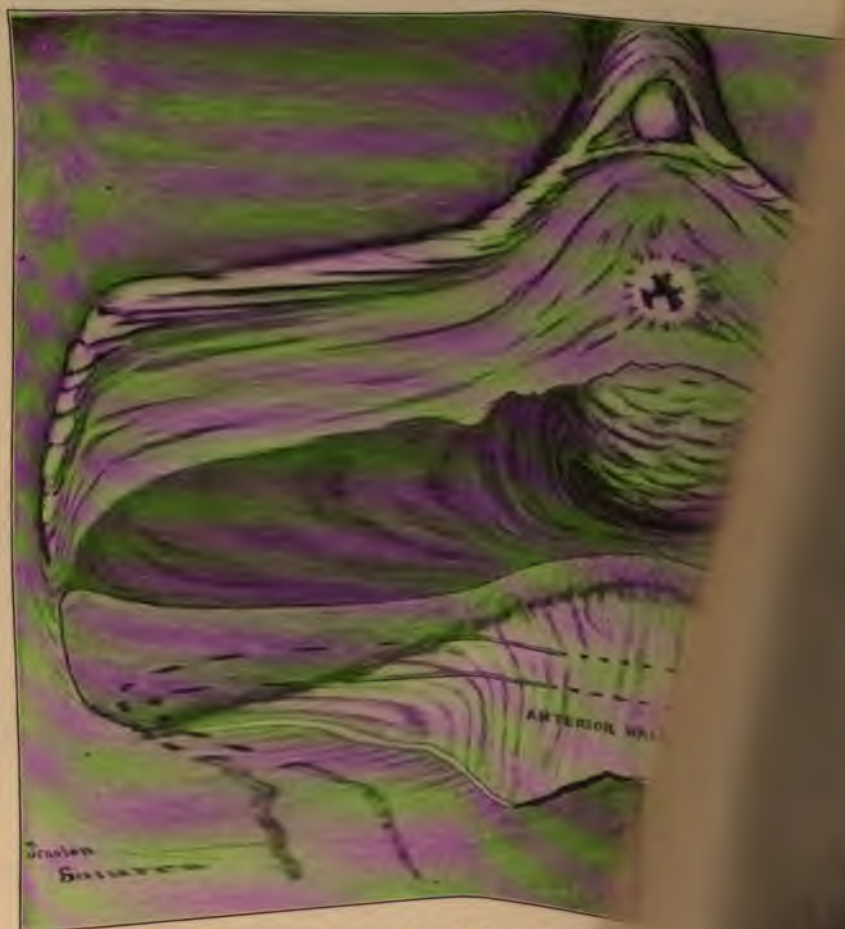


Fig. 22. Two kangaroo sutures (Kangaroo) inserted deeply into the perineum below the opposite side, taking up in cross about its middle portion, without penetrating the other end of the sphincter ani, to introduction.

perineum are next denuded and two kangaroo sutures (Fig. 23)

carry it as far away from the anus as posing the risk of infection by contact with



The protruding rectal flap is anchored on to the perineal incision to keep it as far from the anus as possible.

atter. The kangaroo sutures absorb readily, the rectal flap re- within the anus and returns to its normal position in seven or lays.

same down to mucous flap (*Fig. 24*) projecting from the rectum. The edges of this flap are trimmed free of scar tissue, folded together and

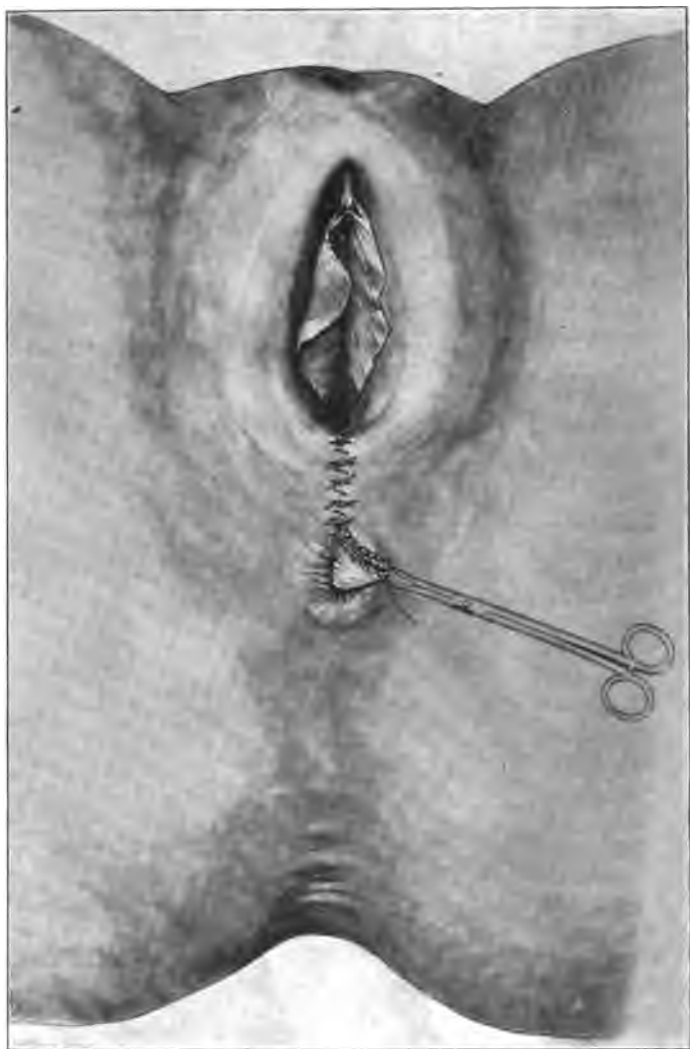


Fig. 24. Whipstitch closing skin is used to fold together the edges of the rectal flap.

closed with the same suture. The flap thus closed should be turned forward and anchored over the perineal incision (*Fig. 25*) with mat-

tress sutures of kangaroo to carry it as far away from the anus as possible, with a view of lessening the risk of infection by contact with



Fig. 25. The protruding rectal flap is anchored on to the perineal incision to keep it as far from the anus as possible.

fecal matter. The kangaroo sutures absorb readily, the rectal flap retracts within the anus and returns to its normal position in seven or eight days.

The advantages are:

1. The removal of liability of infection from the rectum and percolation of fecal matter in the wound.
2. The avoidance of rectal stitches with the pain, distress, ulceration and cicatrization incident to such sutures.
3. It has an advantage over the Ristine operation in this fact that it is applicable to all cases, does not distort or disfigure the vagina or turn a lot of cicatricial tissue into the rectum and is devoid of all tediousness of dissecting flaps.
4. It promises uniform success and permits early evacuation of the bowels without jeopardizing results.
6. It is so easy to perform.

Those persons who have seen this operation admit its necessity, advantages, and say it is practical. They offer no objections, but I have been asked if dragging down the rectum displaces the uterus. To this I reply in the negative. It produces an excess of vaginal flap that requires trimming away, but the uterus is not disturbed in its normal relation to the pelvis, showing that no dragging upon it takes place.

The operation is very easily and quickly done. Making the flap and introducing the tension sutures require much less time than suturing the mucous membrane of the rectum in the present method of operating. Closure of the remainder of the wound is the same, and, therefore, is unchanged in either time or detail.

A notable feature is the small amount of bleeding that occurs. Really it is less than the average operation for partial laceration of the perineum. The reason is that in the latter hemorrhoidal vessels are encountered that cause more or less annoyance from venous bleeding. In this operation they are not encountered unless the mistake is made of cutting too close to the wall of the rectum, but if the incision is confined to the loose tissue between the rectum and vagina the hemorrhoidal vessel will escape untouched and unnecessary bleeding will be avoided. In two instances I had to ligate a single vessel (they were in the first two cases) before I fully appreciated the importance of keeping in the cellular interspace.

The bowels should be evacuated on the third or fourth day, using an oil and glycerin enema in addition to a saline purgative. The ten-

sion sutures are left to absorb, but should be removed if they become infected, usually about the seventh day.

This operation was presented to the American Gynecological Society in a hurriedly-written paper in May, 1902. Since then I have done four additional cases and closed the recto-vaginal fistulæ in two subjects by this method, making in all eleven cases since October 14, 1901, with perfect success in each one.

I renew the claims I made for it in my former paper and also recommend it as an operation for recto-vaginal fistulæ in the lower half of the vagina, but I cannot say if it is suitable for fistula in the upper half, for the anterior rectal wall may not prolapse enough to bring the fistulous opening in it below the verge of the anus.

For recto-vaginal fistulæ in the lower half of the vagina my operation is not a formidable one and does not sacrifice any part of the rectum, as the everted parts retract to their normal place just as they do in perineorrhaphy, consequently continence is not disturbed.

PUS IN THE FEMALE PELVIS.*

BY JOHN B. DEAYER, M.D.,

Surgeon-in-Chief, German Hospital, Philadelphia.

The occurrence of a purulent collection in the female pelvis is due in most cases to inflammatory disease of the ovary or tube, and under the caption of pyosalpinx or tubo-ovarian abscess has been extensively discussed by gynecologists.

Pelvic cellulitis is now recognized as a rare condition, and while the cellular tissue at the base of the broad ligament or anterior to the uterus may become infected and form an abscess yet the condition pure and simple is seldom observed.

Tubal and ovarian abscess, suppurating fibroid and abscess of the uterine wall, hematocele (such as ruptured extra-uterine pregnancy which has become infected) suppurating dermoid and ovarian cysts, and, lastly, appendiceal disease, may be causes inducing an abscess in the pelvis.

It is my intention in this paper to call attention to the more frequent infection of the pelvic organs by appendiceal disease than is usually supposed, to especially outline the differential diagnosis between

*Read February 27, 1903, before South Branch of the Philadelphia County Medical Society.

tubal and ovarian abscess due to ascending infection and to abscess due to appendiceal disease and to indicate the methods of treatment which should be pursued.

A peritonitis of an overlying fibroid of small size and of sufficiently long pedicle to allow its migration into the right iliac fossa, or in close proximity thereto, also an infected fibroid of this character due to a contortion of its pedicle may simulate an appendicitis. I reported such a case last fall, when the diagnosis was only made by a very careful vaginal and bi-manual examination.¹ A small ovarian cyst on the right side, twisted on its pedicle, may simulate appendicitis in the pelvis with abscess. The onset of the pain in both cases may be equally abrupt, but in the case of an ovarian cyst it is more apt to be quite as severe at the onset, as later, while in appendicitis the pain becomes more severe as the disease advances. In favor of an ovarian cyst with twisted pedicle are some of the evidences of shock in the shape of slow, full pulse with normal or subnormal temperature, which is not the case in appendiceal inflammation. I have seen this latter condition confounded with intestinal obstruction, both before as well as after the onset of peritonitis. Vaginal examination in the presence of a small cyst with pedicle of any size must necessarily be negative, but bi-manual examination may outline a tense, regular resisting mass, which could not be confounded with appendicitis until abscess formation had taken place. There are as a rule fewer constitutional symptoms in the case of a twisted pedicle, unless the contents of the cyst have become infected. It is interesting in this connection to note that cases of infection of ovarian cysts by a diseased appendix have been reported.

Extra-uterine pregnancy gives the irregular menstrual history metrorrhagia, and sometimes the other subjective signs of pregnancy with the absence of the early history of appendicitis. If rupture should occur and the resulting hematocele become infected the diagnosis is rendered very difficult, unless the patient can give a clear description of the character of the pain and the collapse at the time of rupture. In a robust individual the anemia and weakness would be more marked than in appendiceal disease.

In the case of pelvic hematocele consequent on ruptured extra-uterine pregnancy becoming infected the interval between the rupture and the infection will necessarily be longer than that between the onset of the attack of appendicitis and the formation of pus. It is very important here, as in all cases, to elicit a most careful history.

The presence of an infected appendix in the pelvis in the female

may produce complicating conditions of the uterine adnexæ, or may be the infecting agent for later pathological lesions of these organs.

Actual contact of an acutely diseased appendix with the right ovary and fallopian tube is bound to infect these structures if the appendix is not removed early in the attack. The migration of infecting bacteria may cause a salpingitis or a tubo-ovarian abscess and in the presence of an ovarian or dermoid cyst or a fibroid may infect these. In other instances the adhesions which are invariably thrown out about a diseased appendix may involve the fimbriæ of the tube, closing the abdominal ostium.

From an anatomical survey of the appendiceal relations the presence of the appendicular ovarian ligament, the fold of peritoneum extending outward from the infundibulo-pelvic ligament to the meso-appendix, must be considered as a factor in aiding the passage of infection from the appendix to the pelvis.

The lymphatic channels in the appendix enter the meso-appendix and passing outward empty into the mesenteric and meso-colic glands. They also follow the appendicular ovarian ligament into the right broad ligament of the uterus or into the pelvic fascia. Blood vessels from the ovarian artery may furnish an additional means of communication between the two organs. Bearing in mind the ability of the appendix to communicate infection either directly through the lymph or blood channels we find an etiologic factor seldom spoken of in suppurative disease of the uterine adnexæ.

The percentage of cases in which acute appendicitis exists in the female has been variously estimated by different observers, and with wide variation. Of the last 500 cases which I have operated upon 170 were women, 34 per cent.

In numerous abdominal sections for pathologic lesions of the uterus, tube or ovary the appendix has been found to be the seat of more or less extensive disease with adhesions involving the right adnexæ. The appendix, it may be stated, was always removed in these instances. Chronic inflammation of an appendix occupying the pelvis occasions symptoms which may be confounded with disease of the uterine adnexæ or retro-displaced uterine fundus.

Kelly² has reported "that in a series of 115 abdominal sections in which the appendix was noted at operation it was found adherent to the right tube or ovary in 10 cases, in 37 cases it was involved in adhesions, was congested in 3 cases, and obliterated at the cecal end in 1 case. Only 64 appendices were perfectly normal."

Ochsner,³ "In a total of 248 patients found the appendix and one

or both fallopian tubes involved in 56 cases, of which 41 had primarily an appendicitis from which the infection extended to the fallopian tube, while in 15 cases the pyosalpinx was the source of the primary infection." He further says that "30 per cent. of perforative or gangrenous appendicitis cases have a secondary involvement of the right tube and ovary. Appendicitis may cause a pelvic abscess in one of three ways: (1) By the extension of the purulent collection from the right iliac fossa to the pelvis; (2) by an appendiceal abscess in the pelvis with the appendix hanging over the ileo-pectineal line or entirely in the true pelvis; (3) and, lastly, by infection of the tube and ovary with involvement of both appendix and adnexa in a purulent exudate."

The majority of instances of pelvic abscess with an appendix above the ileo-pectineal line are due to a secondary involvement from a primary focus, where bacterial infection is very virulent and the adhesions below are insufficient to "wall off" the abscess above the diseased appendix. In such cases the usual sudden onset, in an individual previously well, will be observed with acute pain, nausea, perhaps vomiting, tenderness and rigidity. When the bacteria have invaded the peri-appendicular structures a localized purulent peritonitis may result with abscess formation and with leakage into the pelvis. Irritability of the bladder will then be observed, and in the absence of operative interference sepsis will make its appearance. The leucocytes increase in number with a predominance of the polynuclear forms. A vaginal examination may disclose a tender mass in the pelvis, but not invariably. Bearing in mind these diagnostic points the diagnosis is not difficult, and such cases are seldom confused with right-sided tubo-ovarian disease.

With the appendix below the ileo-pectineal line, somewhat the same course is observed. The onset is sudden, nausea and vomiting are more constant, and the bladder and rectal irritability are more marked. The pain does not become localized to the right side, as a rule, but left-sided colic may be a prominent symptom. Systemic absorption of the septic products is not so severe because of the greater tolerance of the pelvic than of the intestinal peritoneum. A vaginal or rectal examination will show the location of the lesion while abdominal palpation may reveal no mass. Tenderness can invariably be elicited by careful pressure over the lower part of the right quadrant. Abdominal distention is frequently noted.

The symptoms of pyosalpinx, due to appendicitis, are those of appendicitis in the pelvis followed by dysmenorrhea and irregular menstruation, sometimes leucorrhea and other symptoms of unilateral pyo-

salpinx without the indurated feeling of the vagina. There is also no history indicating a gonorrheal infection.

Perhaps it is just as well to assume that in all cases of pus in the pelvis, due to appendiceal disease, the adnexæ must become involved sooner or later.

The abdominal ostium of the tube is surrounded by luxuriant folds of mucous membrane known as the fimbriæ. These, reaching near the lowest limits of the cul de sac, must be bathed by the pus descending from the abscess above, or involved in the infective inflammation when the appendix is adjacent to the fallopian tube. An abscess in the right iliac fossa will always cause adhesions of the contiguous coils of small intestine. A suppurative cholecystitis will, by extension, involve adjacent structures even without the presence of pus. By such analogy we can believe that the tube, at least on the right side, always becomes infected in an appendiceal pelvic abscess.

From the clinical standpoint we know that pyosalpinx is a common ailment and that sterility in women can also frequently be traced to early appendiceal disease with adhesions about the tube, shrinkage of the fimbria and obliteration of the abdominal ostium. The differential diagnosis will therefore be narrowed to distinguishing between an ascending infection of the tube from the uterus and acute appendicitis with pus in the pelvis.

The usual picture of the latter condition has been mentioned, and especial emphasis should be laid upon the sudden onset, the possible history of previous attacks, muscular rigidity, sepsis and the doughy, tender mass felt by vaginal examination without induration of the vaginal vault and with the absence of a gonorrheal infection. Furthermore, appendiceal disease is progressive in character and demands operation during its earliest stages. The virulence of appendiceal pus is unquestioned and speedily results in marked systemic depression from absorption.

While an infection from gonorrhea, post-puerperal sepsis, douches and so on will involve the endometrium of the uterus and ascend the tubes, in the majority of instances nature protects the peritoneal cavity by an inversion and glueing together of the fimbriated extremity. The tube, descending, may form a pyosalpinx, or, as the layers of the mesosalpinx become separated, the tube is brought into immediate contact with the ovary and a tubo-ovarian abscess may result. From imperfect closure of the fimbriated extremity or rupture of the abscess the pelvis may become involved forming an intra, not an extra, peritoneal abscess as would be the case were the abscess the

result of a pelvic cellulitis, although in all cases there are more or less extensive adhesions formed.

The symptoms of such conditions will begin more gradually as a rule with the history of antecedent infection, a leucorrhea, disturbances of menstruation and chronic invalidism. Leakage of pus or rupture may initiate a train of symptoms similar to pelvic appendicitis with nausea and vomiting, sharp pain and tenderness over the lower abdomen. There is never the marked rigidity of the appendiceal lesion until peritonitis advances. Backache and headache are frequently present, and fever, sweating and rigors may be observed. The disease tends to chronic invalidism and not to the rapid sepsis following appendicitis. It should also be remembered that both sides are usually involved.

During 1901 in 75 per cent. of my cases bilateral salpinx was found, and in 8 per cent. of the remaining cases a right-sided salpinx was a distinct result from an infecting appendix.

A vaginal examination reveals exquisitely tender masses, soft, tense and frequently doughy. The uterus is usually retroflexed, barely movable and may be enlarged. In acute exacerbations of a chronic condition the vaginal vault may be infiltrated and palpation difficult. In other instances the entire vaginal vault is hard and bulging, with obliteration of the sulci and with the cervix displaced to either side. Bladder and rectal irritability may be complained of.

A collection of pus in the pelvic cavity demands early removal, and the method of operating will depend upon its location, extent and the degree of sepsis from which the patient may be suffering. In some cases where a mass can be palpated somewhat above Poupart's ligament and when an extensive operation would be hazardous owing to a weakened and septic condition of the patient the abscess may be opened by an extra-peritoneal route. The incision is made outside of the rectus muscle and over the mass; it is nearly parallel to Poupart's ligament as a rule. After cutting through the skin, fat and fascia the external and internal oblique muscles are divided and the peritoneum reflected from the iliac bone until an incision into the abscess would be below its upper limits. The pus can then readily be evacuated and the cavity washed clean with saline solution and wiped out with bichloride gauze.

An inspection will reveal the intestines and omentum firmly adherent and matted together and forming the inner wall of the abscess cavity. The appendix is usually a part of this wall of exudate, and unless quite free must not be disturbed for fear of infecting the gen-

eral peritoneal cavity. It may remain as a constant menace and a source for future infection. The cavity must be well packed with gauze, not sutured, and allowed to granulate from the bottom upward. It is rarely possible in such an operation to inspect the pelvis or to search for secondary abscesses; but in certain cases where the condition of the patient is desperate for the occasional operator and when the means at hand (assistants, gauze, etc.) are wanting this method of operating is justifiable. The number of times when it can be resorted to is necessarily limited, and I have several times had to abandon the procedure, failing to get below the upper limits of the pus, and open the parietal peritoneum to the median line side of the wall after all. This is especially the case when the appendix, while pointing into the pelvis, is well to the median line, and the great omentum endeavoring to aid in the formation of a protecting barrier becomes infiltrated and simulates a mass.

In other cases the abscess is entirely in the pelvic cavity, and the question of vaginal puncture arises for discussion. I do not think that such an incomplete operation is ever justifiable, unless the anemia and septic condition of the patient would preclude the longer and complete abdominal section.

It is not rational nor does it denote common sense to leave such pathological lesions untouched, as must ensue from acute appendicitis with abscess formation in the pelvis. You can open and drain an abscess through the vagina, but the source of infection, the appendix, remains; the fallopian tube, which must be involved, is untouched and even unexamined, and a mass of exudate and infiltrated omentum remains which will serve to harass the patient in the future with the agony of pain from intestinal adhesions. Furthermore, while vaginal evacuation of a pelvic abscess due to a tubal or uterine infection may be feasible and attended by but little risk, that due to appendicitis is a more serious undertaking. In the former the pus forms at the lowest point in the pelvis and will push the intestine upward, while in appendicitis the bowel is not only involved in the abscess, but may be first encountered on opening the peritoneum.

The operation is performed by drawing the cervix well forward or backward and incising the vaginal vault anteriorly or posteriorly freely, opening the peritoneum and evacuating the pus; irrigation should not be practised, and the cavity simply drained with gauze.

Using the finger to evacuate the pus after incising the posterior vaginal wall is very liable to spread the infection from the pelvis upward. The pus in appendicitis is of a "vicious" nature and exceed-

ingly virulent, while it is well known that accidental rupture of a pyosalpinx while delivering the tube may spread the pus over the bowel without causing peritonitis.

In the after-treatment of this operation care must be taken that the cavity is always open and draining. This is difficult to do because repacking with gauze is attended with intense pain and there is some danger of breaking through the wall of adhesions and infecting the general peritoneal cavity.

An abdominal section is to be preferred unless contraindicated by the condition of the patient. The incision should be made through the right rectus muscle, separating its fibres with the handle of the scalpel. On opening the peritoneum the condition of affairs must be carefully studied in order to plan the best method of attacking the abscess and the avoidance of peritoneal infection. With large gauze pads the intestines can be thoroughly walled off and protected. Iodoform gauze may be used to reinforce corners. The cecum can then be slowly drawn upward until the appendix appears and the abscess opened. The rush of pus must be quickly checked by gauze sponging and the diseased appendix ligated and removed. As each part of the iliac fossa is cleaned it must be protected by gauze, and in this way the pelvis is reached and evacuated of its purulent collection. I sometimes reinforce my packing all around, introduce a drainage tube to the bottom of the cul de sac and irrigate the pelvis with saline solution or sterile water at 110° F.

The adnexa are next examined and removed, if diseased, but if possible they should be left in situ and protected with gauze. Several strips of gauze are placed in the pelvis and the glass tube sometimes allowed to remain for 24 or 48 hours. The iliac fossa is then packed with several pieces of gauze, which replace those previously placed there for protection while removing the pus from the peritoneum. The omentum is freed from adhesions and diseased places ligated and excised. All gauze packing is carefully removed and the wound partly closed with worm gut through and through sutures.

The head of the bed is elevated after operation to favor dependent drainage. All forms of opium are avoided, but active peristalsis is not encouraged.

The mortality of appendicitis with abscess in the pelvis is considerably less than in those cases in which the appendix lies behind the cecum, pointing upward or to the median side of the cecum. I have seldom observed necrosis of the bowel in the pelvic cases, and conse-

quently sepsis from absorption through the bowel wall and fistula are of less frequent occurrence.

Death from sepsis is infrequent, perhaps because of the lessened absorption in the pelvis, the pelvic peritoneum being more tolerant than the bowel peritoneum.

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A NEW METHOD OF TREATING THE SUPPURATING ABDOMINAL INCISION.

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Mural abscess is one of the troublesome complications following abdominal section to which but little attention is given in most text-books on surgery.

The small mural suppurations extending for an inch or so and superficial will not be discussed, but it is the more extensive and deep suppurations that the writer wishes to call attention to. Such abscesses occur in the experience of every surgeon; and such collections of pus will, if not promptly evacuated, separate the opposing surfaces of the wound from the peritoneum outward. Sometimes the pus takes the other direction, through the peritoneum and empties into the peritoneal cavity with peritonitis as a result.

The cause of such a suppuration is not always clear. Probably the lack of care in preserving the vitality of the tissues is a factor. It occurs sometimes, however, when every possible precaution has been taken and the incision united in the most approved manner. Causes that undoubtedly predispose to it are the bruising of the fatty layers by rough handling or metal retractors, carelessness in checking bleeding points in the incision, thus allowing small lacunæ of blood to form which offer a suitable focus for infection; the conveying of infection through the skin by the introduction of through and through sutures from the surface of the skin inward, and the using of buried sutures of non-absorbable material. It has been claimed also that chromicized

catgut often contains free chromic acid, which acts as an irritant to the tissues, making suppuration more easily possible; or the catgut itself may not be absolutely sterile. In perfecting the technique of a section due regard must be paid to all these details if the chances of mural infection are to be decreased.

Four or five days after the operation the symptoms first show themselves in abdominal pain and an elevated temperature, while the pulse does not rise in proportion. Sometimes there is a chill; the pain later becomes more acute and localized. If the wound be inspected as it should in all cases of post-operative rise of temperature there will be found a circumscribed red painful induration, or a swelling to one side of the incision or about a suture. Pus may be found oozing from the line of incision or from about a stitch. In some cases if the abscess is small it may heal in a few days after the pus is evacuated.



Fig. 1. Suppurating abdominal section.



Fig. 2. Suppurating abdominal incision.

In others the large wound cavity may continue to discharge for weeks. When the abscess is deep down between the muscles and peritoneum the diagnosis may be confused with a localized infection about the pedicle of a pelvic tumor. The superficial character of the swelling, however, usually renders the diagnosis clear.

If the abscess is discovered early the removal of one or two sutures and the evacuation of the pus may restrict the destructive process. In a large proportion of the cases, however, the suppuration travels the

whole length of the incision, making it necessary to reopen the incision and convert the abscess into a widely open field.

The treatment of this condition must aim at the destruction of the pus and the keeping of this large suppurating area clean. Hydrogen peroxide may be used once or twice daily, followed by one-half of one-per-cent. solution of formalin, a solution of one of the newer silver salts, as protorgal, argyrol, etc., or a weak bichloride of mercury solution. After one or more weeks the profuse discharge of pus may be stopped by this means.

The question now arises as to the closure of this wide open incision.

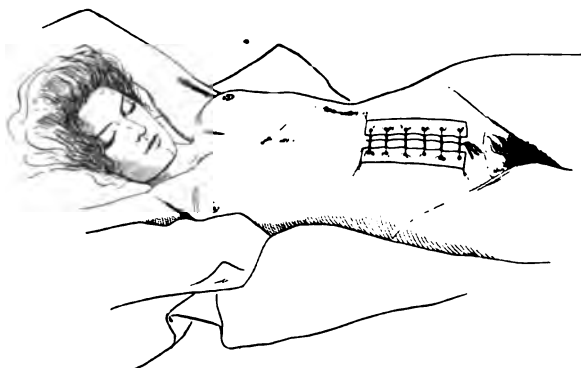


Fig. 3. Showing adhesive strips on either side of the incision, sutured.

Shall any attempt be made to bring it together with sutures, or shall it be left to a tedious granulating process filling in this large area with scar-tissue? Since the whole surface has been infected, if sutures are again passed through the tissues in order to bring the edges of the incision together pus may form along the track of the sutures and render them valueless. If the wound is left open to granulate, as is usually done, the process is tedious, extending oftentimes over weeks, and a large, unsightly, irregular scar is left.

The method here described in closing such wounds has been used with success by the writer. It has obviated both these difficulties and given good results, and its simplicity recommends it. The patient is given a few whiffs of the anesthetic. The edges of the incision are then gone over lightly with a curette merely to freshen up the granulations.

In the bottom of the wound is then placed a narrow strip of iodoform gauze or a few strands of silk worm gut for drainage. A strip of zinc oxid adhesive plaster about six cm. wide is now laid on each side of the incision about two cm. from its margin, and interrupted sutures are passed between the inner edges of the adhesive plaster across the incision without penetrating the skin. An assistant brings the edges of the incision together over the drain by using pressure from each side of the wound. The sutures are now tied tightly across the incision. The two sides of the incision being closely approximated by this means union takes place promptly, and when the drain is removed only a straight line scar is left.

Acknowledgment is made to Dr. Philander Harris for the use of two of his cuts.

THE CONSTITUENTS OF THE COLLOID OF AN UTERINE FIBROMA.

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The colloid material sometimes found in uterine fibromata has not been investigated chemically. The only record which I could find is by Pfannenstiel¹¹ of a single case. This report is very brief. The author states that alcohol caused a proteid precipitate like curdled milk, the precipitate containing no mucin or psuedomucin; the filtrate contained some sugar. In the absence of more definite information I was glad to examine the content of such a colloid fibroma removed by Dr. C. A. Hamann.

The following brief *clinical notes* are furnished by Dr. Hamann:

The patient, Mrs. N—, æt. 45, had five children, the youngest twelve years ago. There had of late been more or less menorrhagia and metrorrhagia. A large, pear-shaped, rather soft tumor existed in the lower abdomen. It moved with the cervix. Hysterectomy was performed on February 18, 1902. The tumor was quite soft and semi-fluctuating, showing colloid degeneration of the interior. It proved to be an interstitial fibroid. The patient did well for eight days, and then died rather suddenly, presumably from hemorrhage. There was no

autopsy. The tumor proved to be a fibromyoma which had undergone partial colloid degeneration. The ovaries were also cystic.

The tumor was of considerable size, 6x8 inches, but only about 10 gms. had been reserved fresh for chemical examination, the rest having been placed in formalin. For this reason it was impossible to make the examination as thorough as I would have desired; but I feel justified in reporting my results by the hope that they may cause further investigation.

The *general characters* of the material are as follows: It constitutes a somewhat stringy tremulant jelly of a pearly-white color, tinged with a few streaks of pink and red. Treated with water, or dilute sodium carbonate, hydrochloric acid or NaCl solutions it dissolves partly, leaving a perfectly white residue. The solution is rather viscid and stringy, colorless, but somewhat opalescent. The opalescence is greatest in the salt solution, least in the carbonate. The reaction of the water solution is somewhat alkaline. The solutions give the color reactions of proteids, but boiling, neutralization or acidulation does not produce precipitation. The solutions do not reduce cupric sulphate (or rather very slowly and weakly), but acquire marked reducing power on prolonged boiling with dilute acid. The boiling with dilute acid produces in all the solutions a sulferino-pink color, pointing also to the presence of a carbohydrate constituent. Similar characters are possessed by solutions of the residue which was insoluble in water, but which may be brought into solution by methods to be described later.

These characters are sufficient to assign the constituents of this fibroma colloid to the class of mucins; they differ, however, from true mucins (and also from nucleoalbumins) by not being precipitated by dilute acids. In this they resemble the characteristic constituents of ovarian cysts. I shall show that this resemblance extends also to most other reactions, with one important exception, viz., the behavior toward alcohol.

Characters of the Ovarian Colloids.—Since the studies of Virchow (1848) and of Scherer, the reactions and chemistry of ovarian cyst contents have been quite extensively investigated. The colloids may be divided according to their solubility in water. The water soluble portion is called by Hammarsten "pseudomucin" (this is identical with the "metalbumin" of Scherer, and with the "colloidine" of Gautier). The part which is insoluble in water was formerly called colloid proper. To avoid confusion, Mitjukoff has given it the name "paramucin," which has been generally accepted by recent authors. Pseudomucin is

an invariable constituent of glandular ovarian cysts (Eichwald, Hammarsten, Panzer, Oerum, Pfannenstiel). In parovarian cysts its presence is altogether exceptional (Pfannenstiel). Outside of these it seems to have been found beyond reasonable doubt only in a "ganglion" in the thigh of a man by Hammarsten.* In ovarian cysts the pseudomucin is frequently associated with serum proteid. The precipitation reactions of the latter are somewhat altered by the presence of the mucin, so that the mixture was considered as a chemical entity and named paralbumin by its discoverer, Scherer. Hammarsten proved the error. Paramucin may or may not be associated with the pseudomucin, from which it differs mainly by its insolubility. When it is brought into solution it resembles pseudomucin very closely, and may indeed be identical with it (Gautier, Pfannenstiel, Mitjukoff, Leathes).

The most important character of these ovarial mucins is the presence of a carbohydrate group in their molecule, so that they reduce Fehling's solution after boiling with acid, and in the case of paramucin even before. The constitution of this carbohydrate group has been recently studied by Panzer, Leathes, Zaengerle, Müller, Steudel, Neuberg and Hymann.

The special reactions which are of use in identifying these substances are the following:†

Characters of Pseudomucin (Compiled from Scherer, Eichwald, Gautier, Hammarsten, Landwehr).—Soluble in (1) water, or (2) dilute alkalies; the solution is only rendered opalescent by (3) boiling in any reaction, or by (4) dilute acids. (5) Alcohol precipitates it as a white, stringy mass, which redissolves in water even after a month. (6) Concentrated NHO_3 turns the solutions first yellow, then viscid, then light yellow; (7) Millon's reagent gives a good reaction; the biuret test (8) is rather faint; (9) Fehling's reduces after boiling with acids; (10) tannin gives a precipitate, or renders gelatinous. The solution becomes somewhat more viscid, but does not precipitate with ferrocyanic acid (11), mercuric chlorid (12) cupric sulphate (13) or picric acid (14). Lead acetate (15) gives a flaky precipitate, easily soluble in an excess of the reagent. Saturation with magnesium sulphate (16) does not precipitate, but the solution becomes opalescent on boiling.

Characters of Paralbumin (after Hammarsten).—This differs from pseudomucin in being more readily precipitated by proteid reagents;

*Maly's *Jahresber*, 1892, xxii, p. 561.

†For convenience of comparison the reactions are numbered alike in the description of every substance.

the alcohol precipitate (5) does not preserve its solubility in water for as long a time; it is, however, still soluble after 12 to 24 hours.

Boiling (3) causes, in a slightly acid solution, incomplete precipitation; dilute acetic acid (4) does not precipitate. Good precipitates are given by strong HNO_3 (6), tannin (10), ferrocyanic acid (11), Hg Cl_2 (12); Cu SO_4 (13), CO_2 also causes precipitation. The behavior to Fehling's (9) agrees with pseudomucin.

Characters of Paramucin (after Mitjukoff, Panzer, Leathes and Steudel).—This differs from pseudomucin in the first place by its insolubility in water, cold or boiling; and by reducing Fehling's (4) without previous inversion. When brought into solution by Na OH it is more readily precipitated by proteid reagents. It is insoluble in water, cold or boiling; (1) but dissolves in water at 110° ; in dilute alkalies (2) it first becomes gelatinous, and then dissolves, but it is insoluble in carbonates. In dilute acids (4) it shrinks and does not dissolve, but it dissolves in pepsin-hydrochloric acid (4a); alcohol (5) makes it white and opaque, but it preserves its solubility in water. Concentrated HNO_3 (6) dissolves it with a yellow color. Millon's reagent (7) and the Biuret reaction (8) are positive.

Characters of Paramucin Brought Into Solution by Dilute Na OH (Same authorities as above).—This agrees with pseudomucin in not being changed by boiling (3), or by neutralization (4); it behaves similarly to alcohol (5); it gives the same color reactions, (6, 7, 8); it is precipitated by tannin (10); Mg SO_4 (16) does not precipitate it; Fehling's solution (9) reduces it without previous boiling with acid; metallic salts (11, 12, 13, 15) precipitate it; concentrated nitric acid (6) causes a turbidity which dissolves in an excess of the reagent; dilute acids (4) cause (according to Mitjukoff) a flaky precipitate, which dissolves in an excess of the reagent. Panzer did not find the precipitate (this difference may depend on the presence of salts, etc.). Half saturation with ammonium sulphate in alkaline solution (17) causes a flaky precipitate; NaCl (19) or Na_2SO_4 (20) precipitate only on saturation.

Characters of Pepsin Digest of Paramucin (Mitjukoff, Leathes).—This differs from the NaOH solution mainly by the fact that it does not reduce Fehling's until it has been boiled with acid. The biuret test (8) still gives a blueish rather than a pink color.

Characters of Paramucin Brought Into Solution by Water at 110° (Gautier).—This agrees with pseudomucin rather than with the alkaline solution of paramucin, as it is not precipitated by metallic salts.

It possesses the other characters common to pseudomucin and paramucin.

Comparison of the Fibroma-Mucins with the Ovarian Mucins.—

The water soluble portion, which I shall call *fibroma-pseudomucin*, compares with ovarian pseudomucin as follows: It agrees in the behavior to water (1), alkalies (2), boiling (3), acids (4 and 6), color reactions (6, 7, 8), and tannin (10). The main difference is found in the action of alcohol (5): This produces an abundant precipitate; but when this is treated with water almost at once it does not dissolve, even after a half hour of boiling. Other differences exist in the behavior to CuSO_4 (13) which causes a slight precipitate; and to ferrocyanide (11), HgCl_2 (12), and picric acid (14), which give good precipitates.

Further tests which were tried are:

Half saturation with $(\text{NH}_4)_2\text{SO}_4$ produced no precipitate at once in the cold, but precipitates on boiling. Formaldehyde causes no immediate change.

When the alcohol precipitate of fibroma pseudomucin is treated with $\frac{1}{2}$ per cent. NaOH , it dissolves readily; when this is neutralized with HCl , it gives off an odor of H_2S and becomes opalescent, but does not precipitate. This solution agrees with the unaltered fibroma-pseudomucin in reactions 1 to 9; also in giving a good precipitate with ferrocyanide (11) and picric acid (14) and turbidity with CuSO_4 (13).

It differs by the behavior to alcohol (5); this causes only turbidity but no precipitate. The action of the following precipitants is also changed: Tannin (10) or HgCl_2 (12) causes only turbidity or very small precipitates. Half saturation with $(\text{NH}_4)_2\text{SO}_4$ (17) caused complete precipitation, as also saturation with Mg SO_4 (16) or Na Cl (19). This reaction (16) differs from unchanged ovarian pseudomucin.

The more pronounced precipitant action of metallic salts on the fibroma pseudomucin, as compared with the corresponding ovarian substance, could be explained by the presence of serum proteid in the fibroma colloid. This view is favored by the changes in its reactions which occur on heating it with NaOH . The behavior to alcohol, however, seems a more distinctive difference, and cannot be explained on this ground.

The *fibroma paramucin* also differs from the ovarian paramucin in its behavior to alcohol. This produces only an opalescence, or a very small precipitate in its alkaline or peptic solution, whereas the ovarian solution gives good precipitates.

In all other particulars the agreement is practically perfect: Solu-

bility in NaOH, Na_2CO_3 , or pepsin hydrochloric acid, boiling (3), changes of reaction (2 and 4) (no precipitate occurring at any stage), concentrated HNO_3 (6); color reactions (6, 7, 8) and Fehling's solution (9).

The alkaline solutions agree in the precipitation reactions with tannin (10) and metallic salts (11, 13, 14).

The peptic solution agrees with the corresponding solution of ovarian origin by its behavior to $(\text{NH}_4)_2\text{SO}_4$: in acid solution it is not precipitated by half saturation with $(\text{NH}_4)_2\text{SO}_4$, but is completely precipitated by complete saturation.

Conclusions.—The fibroma colloid contains a pseudomucin and a paramucin probably mixed with some serum-proteid. These mucins resemble the mucins of ovarian colloid very closely, the only difference which could be demonstrated consisting in their behavior to alcohol. The quantity of material was not sufficient to investigate whether this difference was accidental or of real importance.

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THE AGE OF FIRST MENSTRUATION AT POLE AND EQUATOR.

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SCHEME.

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*Read before the IV International Congress of Gynecology and Obstetrics at Rome, Sept. 15, 1902.

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IV. Conclusion. The age of first menstruation varies greatly in the extremes of temperature, is much the same at the Pole as it is at the Equator, and is distinctly independent of climate. Precocious puberty in the Tropics—retarded development in the Arctic Regions is an antiquated myth which must be abandoned.

“Milieu” alone, the “tout-ensemble” of all conceivable causes, seems to explain these as yet unaccounted for variations in the age of First Menstruation.

I.—PRECOCIOUS PUBERTY IN THE TROPICS AND RETARDED DEVELOPMENT IN THE ARCTIC REGIONS ERRONEOUSLY ASSUMED.

Precocious menstruation at 9 or 10 in the Tropics and retarded development, with puberty at 18 or 20 in the far North is a myth which has so long prevailed, has been taught from generation to generation, copied from text-book to text-book, and is, moreover, so much at variance with the actual facts that these erroneous views should be promptly corrected, and this can be done only by presenting the subject for the consideration of a great international gathering such as this.

A study of the age of first menstruation at Pole and Equator has developed facts of great ethnological and physiological importance and, moreover, facts diametrically opposed to all hitherto accepted teachings: pubertal development is *not* as a rule *early in the Tropics* and *late in the Arctic regions*: the negro woman of Somaliland develops at 16, as late as the Laplander in Norway; and the Samoides on the Obi River in Siberia become mothers at 11 or 12, as early as the Hindoo girls of India and even earlier: The Eskimo women of Greenland develop much as do the Moorish women of Morocco; in fact the age of pubertal development at the Pole may be almost as early as it is usually supposed to be at the Equator and at the Equator as late as it is usually supposed to be at the Pole, and yet it is true that climate *does* affect sexual activity and sexual development—to some extent. It is true that pubertal development most generally takes place in the warm months, that conception generally occurs in the spring. It is true that the determination of sex in the ova of certain insects, male, female or neuter, is determined by temperature, as it is in the flower of certain plants,—it is true that

in the temperate zone pubertal development is earlier in the South, later in the North, earlier in Italy and France (at 14 and 15) than it is in Germany and Denmark (at 16),—earlier still if we go yet farther South, to India and to Egypt, where it occurs at 12.5 and *is said* to come at 9 and 10: later still than in Germany and Denmark it comes in Russia and in Norway (at 17). This is true as far as civilization extends, within the limits of the temperate zone; if we go beyond this into the extremes of temperature North and South, we are brought face to face with conditions utterly at variance with all preconceived ideas,—as we go *further north*, toward the Pole, pubertal development is *not later* but on the contrary, *earlier*, almost as early as in extreme southern latitudes, varying greatly with race, from 12 to 16. As we go *further south* toward the Equator development is *later* never as precocious as it is in the southern regions of the temperate zone, always later (from 12 to 16).

If I do not in this brief sketch, substantiate every statement I make it is merely for lack of time, and I beg that it be thoroughly understood that every assertion here made is based upon well authenticated statistical data, and in order that the value of such statistics be patent to every one, I have given in the tables the number of observations upon which they are based and the name of the observer.

With regard to the Temperate Zone, my deductions are drawn from over 100,000 observations, of which 20,000 have been made either under my own eye, or at my instigation: from the Arctic Zone I have 624 observations and from the Tropics 2733, or, if we exclude the older records from the sub-tropical climate of India and consider only the equatorial regions strictly, 1,593.

To the statements of travellers I have given due consideration, as many of these have come from scientific observers, but they are of secondary import only to me and yet our previous knowledge has been based entirely upon such more or less vague and always doubtful assertions. I can but repeat that these are of but secondary import; my deductions are based upon statistical data, culled by *medical* observers familiar with the people and long resident in the country. In addition I rely also upon my own personal observation among negroes, Eskimos and Indians, and upon the personal knowledge of officials resident in both the extremes of North and South for a sufficient time to admit of the observation of individuals throughout the entire period of development from birth to puberty, marriage and child-birth, so that no possible doubt can exist as to the subject of age which is so often questionable among primitive peoples who know not their own years.

II.—FACTS IN THE CASE—AGE OF FIRST MENSTRUATION IN ARCTIC, TEMPERATE AND TROPIC ZONES.

The age of first menstruation of such races and peoples as have been observed in the different zones is clearly shown in the accompanying tables and diagrams, and I will here briefly present the facts, clearly distinguishing between *statistical data* and the *reports of travellers* which I merely refer to as of interest because hitherto they have been our main source of information.

I.—*Arctic Zone.*

a.—Statistical data are of necessity scant as the population is limited and medical observers of long residence are few and far between. All reports coincide in the early puberty of Eskimo women, and if we consider them as many ethnologists do, as hyperborean Mongols sprung from a southern race, this may not be surprising. A comparatively late puberty is however ascribed to one of the Eskimo tribes by Von Haven, whose 100 observations show 16 to be the age of development. The Quenas who are still farther North develop at an earlier period (at 15) and the valuable study of Mathews shows that the sub-Arctic Indians of the Hudson Bay Territory develop at 12.6 years; this authority, whose long residence among the people demands credence for him, tells us that the Eskimo living still farther North develop even earlier, and this is a frequent statement from northern observers that puberty is earlier among residents of a still more northerly region.

b.—Travellers' Statements.—Six hundred and twenty-four cases is perhaps a small number for statistical study, but travellers almost without exception corroborate my statistical results and unite in the assertion of this precocious puberty among the Eskimo of both hemispheres, in the entire circle about the Pole. Puberty is late upon the northern outposts of civilization among the Russians, the Esthonians, the Norwegians; it begins to be somewhat earlier farther North, among the Finns and the Lapps, and is most precocious at the farthest extreme among the Eskimo. I have the personal assurance of several observers of the occurrence of child-birth at 13 and 14 among the Polar race: a physician long resident among them has knowledge of motherhood at 11.5, at 12.5 and frequently at 13 years. Von Humboldt says that the Koriaks of Siberia are often mothers at 10, and the authority of such a traveller we must credit: Tooke, whose long residence in and knowledge of Siberia gives authority to his statements, says much the same

and speaks of the astonishingly early maturity of the natives of North-west Siberia. Among the Slavonians he notes a less early development, between 12 and 13.

2.—*Temperate Zone.*

A knowledge of the variations in the age of First Menstruation among the different races and peoples of the Temperate Zone is essential in this investigation, because the conditions existing in the extremes, at Pole and Equator, are so contradictory and confusing; the positive data we have are so limited in number, that a knowledge of the facts as far as pubertal development is concerned in this carefully studied region, will assist in some measure at least to solve this curious question. The period of pubertal development is one of such importance that in all civilized countries, and these lie within the limits of the Temperate Zone, the subject has been fully investigated by scientific men, and prominent among them are members of this Congress past or present; for instance the valuable researches made in England by Tait, in Spain by Gutierrez, in Finland by Heinricus, in Greece by Corumelas, in Austria by my esteemed friend Chrobak at my own instigation. From Italy we have the admirable study of Raseri, made in the interest of the Government: thus we have over 100,000 observations giving us results which admit of no discussion. A fact which stands out prominently is the great discrepancy in the age of pubertal development in the *Old* and the *New World*, in Europe and in America, though within the same latitude, the same general climatic conditions and among people of the same race and the same nationality. Hence in a consideration of the subject we must distinguish clearly between the *Old* and the *New World*, between European and American countries.

a.—The Temperate Zone of Europe.—I have grouped nearly 60,000 observations, 58,737 from the centre of European civilization, from Italy and Spain to Germany and Denmark, and it will cause surprise to know that the mean age of pubertal development in these temperate regions is nearly 16 years, 15 or somewhat over 15.5; 14.2 in Spain, 14.8 in Italy, 14.6 in France, 15 in England, 16 in Germany, over 16 in many parts of Germany and in Denmark and Norway. It will be noted, and it is so important that I repeat it, that in a general way as we go *farther North* puberty is *retarded*: among the peasants of Russia and Esthonia it comes as late as the 17th year, not quite so late in Finland and in Norway, but even in Southern Germany, in Bavaria, it is as late as 16: in Italy 14.8 and if we go farther south, to Egypt and Arabia, *I am told*

and it is recorded by travellers that development is precocious, at 10 or 11, but *no statistics* exist and I have my doubts as to these vague statements of this very precocious puberty, especially when I know from Greece and Turkey that among the mountain people of these countries and of Asia Minor, development is as late as the 16th year, though earlier among the same people when transplanted to the lascivious civilization of the large cities and above all when brought in youth to the harem. I simply point to these general facts to indicate the comparatively late puberty of European women, and also the apparent indication of climatic influence in a later development in northern regions and an earlier in the South.

b.—Temperate Zone of America.—On the American Continent both in Canada and in the United States, conditions are entirely different: We have the same races, the same people transplanted to a new world but the period of pubertal development *does not remain the same*; 14, more strictly 13.9, is the mean age of First Menstruation from the Gulf of Mexico to the icy regions of Canada and from the Atlantic to the Pacific. This change takes place promptly, in the first generation, among the descendants of English, German, French and Italians, to whom all puberty comes at a much later date in their native countries. This is probably true also of immigrants of other nationalities in the United States, but these I have not personally observed. It is worthy of note that in the United States and Canada there is but very little variation among all classes of the population as well as all nationalities in the age of first menstruation,—13.6 among the better educated of the higher classes, 14.3 among the laboring class, whilst in European countries this difference is two years and over. This contrast in the functional characteristics of the women of the Old and New World appears still more striking when we consider districts upon the same isothermal lines: in St. Petersburg 15.5 to 16 is the mean age of puberty, in Montreal with the same mean annual temperature it is 14.3 among the English, 13.7 among the French. New York and Boston in the same latitude and with the same temperature as Paris, London and Berlin show the same age (14) which is universal throughout the United States and Canada, whilst in the European States it varies from 14.5 to 16 and even 17. The striking feature which my study of some 20,000 cases in the United States and Canada has developed (10,000 of these have come under my own personal observation) is that among all nationalities and under all the varying climatic conditions of the *New World* the age of pubertal development *does not vary*. It remains practically the same and offers a marked contrast to the great variations upon the European

Continent, from 14.5 in Italy and Spain to 17 in Russia and parts of Germany.

3.—*The Tropics.*

We have always associated the burning sun, the brilliant colors and luxurious vegetation of the Tropics with the early bloom of women, and the stories of travellers concur in this tale of early puberty, we are always told that girls menstruate at 9, 10 or 11; this is what travellers tell us who pass through the country, speak not the language or if so have not the confidence of the people and know them not; they are vague reports which have however sufficed to establish the universal belief in this precocious puberty of the Tropics. *Not one statistical investigation can be found to corroborate this*; on the contrary, all statistical studies and the reports of scientific investigators who have studied tropical countries, invariably tell us of a relatively late development, in fact the age of puberty, whilst varying varies only as it does in the temperate zone, as it does among European peoples.

a.—Statistical Data.—Statistical data are meagre, altogether 2,733 cases, and if we except 1,140 from India, collected by Robertson between the 18th and 22nd degrees of northern latitude, from Calcutta and Bangalore, where we have a mean annual temperature of 25° C. (78° Fahr.), we find that the age of pubertal development varies from 14 to 16: I look upon this region of India as still *sub-tropical* and not to be included in a study of Equatorial peoples. As we near the Equator, statistical investigation points to later puberty: in Siam, which is 13° N. of the Equator, 14.5 is the age of development: in Batavia 8° below the Equator, it is the same (14.6), that is, among the descendants of Europeans; in Cochin China (11° to 17°), it is 16.6, and with slight variation the same conditions prevail among the three different races found in that country, the Annamites, the Chinese and the half-breeds. These are facts based upon a study of 1,244 cases by Mondiere, whose long residence and intimate knowledge of the natives gives assurance of the correctness of any statements he may make. The negroes of Barbados and Jamaica also develop at a relatively late period (15.6) and the same is true of those of Demerara as proven by statistical study; to these facts I call a special attention because these negro slaves are brought from the equatorial regions on the western coast of Africa, and this is likewise the period at which puberty comes to them in their native land, as reported by German ethnologists who have there investigated the negro tribes.

b.—Travellers' statements.—All statistical facts indicate a relatively late development in equatorial regions and this is corroborated by the statements of scientific investigators who have studied these regions: German ethnologists specially have given attention to the subject, 15 and 16 is more frequently mentioned as the age of puberty than 12 or 13. The negroes of Somaliland, extending from the Equator 10° N. attain puberty at 16 and so do those of Bogosland, extending 10° S., who first menstruate at the same age. In Loango from 14 to 15 is given as the age. On Biafra Bay among the Benin and Biafra only do I find so early a period as the 11th and 12th year mentioned, but this, I should add, is only a general observation. From Abyssinia, from Arabia and from Egypt more remote from the Equator come rather vague statements of an early puberty in the 11th and even the 10th year, but from these regions *stricte sic dicti* as I have before stated, we have *no absolutely reliable observations* and above all *no statistics*. The reports from the equatorial regions appear more worthy of consideration because they come from scientific observers and because the age of first menstruation is a period of such importance, I may say *the most important epoch in female life*, that it is recognized among most of the African tribes by very elaborate religious ceremonies lasting often many days, hence the event is one readily noted, it is generally known, made evident to the observer and hence can be recorded with certainty.

Though unwilling to base my deductions upon any but scientific statistical observation, I call attention to such observations as these as corroborative and it may be observed that even the statements of travellers mention an *early puberty* of 10 and 11 *only in sub-tropical regions* and not in the equatorial; so far I have not been able to discover a single statistical study which reveals a very precocious development, say at 10 or 11, among any people, and I am inclined to believe that exceptional cases are cited where such early development has actually been known; it is the *exceptional case* to which attention is usually called, and as no others are noted this is accepted as typical. This idea of a precocious puberty in the south will be dispelled with the advance of scientific research precisely as have the formerly accepted racial characteristics of the skull taught by the once highly regarded science of Craniology which attributed a certain peculiar skull formation to every race and tribe: this has disappeared as it was based upon very few and usually peculiar skulls which the traveller happened to secure, or secured, *because they were unusual*. As soon as larger numbers were studied these isolated observations proved to be fallacious and we found that these supposedly typical peculiarities were only *individual*

abnormities as I take the precocious menstruation at 9 or 10 to be in tropical countries, but when such a case is really observed, it is noted and accepted as characteristic of an entire people.

III.—CAUSES INFLUENCING THIS VARIATION IN THE AGE OF PUBERTAL DEVELOPMENT.

In seeking an explanation for the phenomena here presented which are so much at variance with our pre-conceived ideas, I shall briefly recall the various conditions which may influence the age of pubertal development and the appearance of first menstruation: prominent among these have always been mentioned *climate* and *race*, I may add *nutrition*, *heredity*, *social status*, *occupation*, *sexual precocity* and what I look upon as most important of all, *mentality* or the *nerve influence* and the "milieu" or the surroundings which is actually the sum-total to all these conditions. Size and complexion have been referred to and have been cited gravely by others, but with so negative a result that I may say they do not merit our attention.

I.—*Climate.*

Some of our hitherto accepted authorities have presented facts which would appear to point to climate as the all-determining cause; others equally competent, with an equally good material have demonstrated with equal clearness that climatic influence was null and had no bearing whatsoever on pubertal development; conclusive facts can be found in proof of either assertion, as is readily demonstrated, and for this purpose I will present both groups. *Each is correct, as far as his investigation extends*, but each is based on a limited field of observation.

a.—Sexual development is influenced by climate.—The influence of climate, or rather of temperature upon all living organisms is evident and its effect on sex and sexual development is recognised in both animal and vegetable life.

1°.—Animals, insects and plants.—In the lower animals, in insects, sex development is frequently dependent upon temperature, as is most perfectly demonstrated in the ovule of insects developed by parthenogenesis: the ovule of the frog develops male or female according to the degree of heat, invariably a higher temperature is essential for the development of the male. In the admirable experiments of Maupar, on *Hydatina Senta*, he has clearly shown this: by keeping the ovule be-

tween 26° and 28° C., 97 per cent. of the 104 ovules developed as male; of a second hundred which were kept at a lower temperature (between 14° and 15° C.), 96 per cent. developed as female. Melons, cucumbers and other plants show the same influence of temperature. In a higher temperature, in the sun, the same plant develops male flowers which in a more shady locality, under a lower temperature develops female blossoms.

2°.—The human female.—That temperature has a certain influence upon the sexual organization of the human being is evident: the time of pubertal development of the girl is mostly in the summer months: Conception takes place most commonly in Spring, in April, May and June, as has been shown by several observers, especially by Lastri and Ferrari, who have studied the records of the Baptistry of Florence for 400 years, with this result,—they found too that if winters are over-cold, the period of conception is later; on the contrary, if winters are mild and summers hot it comes earlier, and in the Antipodes, where the seasons are reversed, the prevailing period of conception is correspondingly changed. Then again we have seen that on the Continent of Europe the age of the first menstruation is earlier in the more southerly, later in the more northerly countries; this is a fact but whether it can be ascribed to climatic influence I am not prepared to say, as the proof is not sufficiently positive, the various nationalities differ so much in all their characteristics, in mental and physical organization, but it would appear as if a certain influence did exist and as if the age of first menstruation, at least *in the temperate zone of Europe*, was to some extent affected by climate.

c.—Age of first menstruation independent of climate and even contrary to the usually supposed climatic influence.—I have shown that the Eskimo in the far North attains puberty as early as it is possible for any tropical people to do and on the contrary that late puberty is a common occurrence in equatorial regions. The French who come from the warm regions of southern France to the cold climate of Canada with a mean annual temperature like that of St. Petersburg, mature earlier in the low temperature of their new home than they did under the warm sun of the Mediterranean. The same negro races to whom puberty comes at 15.6 in Demerara or Barbados develop at 14 in the United States in the southern and middle regions, and in the *northern* parts of the country still *earlier* when under more favorable social conditions. All these are striking instances of the fact that pubertal development is independent of temperature or that if it does in some way

influence the age of first menstruation there are other causes far more potent which determine the coming of the period.

2.—*Race.*

Like climate, race has been asserted to be a potent factor in determining pubertal development, but I will show that the same is true of race as it is of climate, that striking facts may be cited *pro* and *con*, and that the arguments in favor of each are correct as far as they go, but all who have discussed these questions have covered too small a territory and have considered only some few of the many facts in the case.

a.—The age of the First Menstruation is determined by race and varies with race.—This is readily demonstrated, we would say, by a glance at the charts which show a great difference in the age of pubertal development among different races under the same climatic conditions. I need but recall the differences in the age of first menstruation among the different races at Pole and Equator, the difference between the German and the French living under practically the same climatic conditions, so also the marked difference in the age of puberty among the various races inhabiting one and the same country as in Transylvania and the many races found in Turkey. The Germans inhabiting Transylvania, a colony brought there in 1125, show the same characteristics in regard to the time of pubertal development as those of the present inhabitants of the Rhine regions from which these people originally come. The Jews found in many different countries develop at about the same period wherever they be, *if under the same social conditions*. All this would seem as if race were a factor to be considered in the question of pubertal development but a study of other facts, especially of the conditions existing in the New World demonstrates the invalidity of any such factor.

b.—Race without influence whatsoever on pubertal development.—In the United States and in Canada I have studied the German, the French, the English and the Negro, and as again and again stated, the age of pubertal development is the same for all (at 14): this is true of the Germans who in their native land develop at 16, as it is true of the French and of the English to whom in the old home puberty came at 14.5 or 15: the negro with puberty at 15.5 or 16 in Africa and in the West Indian Islands, likewise develops at 14 in the United States: the French are somewhat earlier, as the English and German are later, each by two- or three-tenths of a year, but the same statement

holds good that they lose the racial characteristics observed in their native land.

It is unnecessary to cite further examples, these facts suffice to show that *the same is true of race as it is of climate* that it exercises *a certain* influence, that the age of puberty differs among different races and that race is a factor which may to some extent influence pubertal development *provided that all other conditions remain the same* but that it exercises no marked influence as is readily proven by the conditions existing in the United States, where development takes place at the *same age* among the *different peoples* and *different races* who differ so much from each other in their native country, racial characteristics disappearing entirely in the new home.

3.—Nutrition.

This is an influence marked upon all living organisms, animal and vegetable and marked as well in sexual development and in the determination of sex.

a.—In animals and plants this influence is readily traced.—Sexual development of the animal in captivity, where it is cared for and well fed, is earlier than it is in its natural condition where food is often scant: animals like their human masters are less fruitful in years of famine, and likewise over-fed animals pro-create less freely than those with only nutrition sufficient, a fact recorded already by Pliny and well-known to every observing farmer. We know that not only quantity but the oft varying qualities of fruits depend upon their nutrition. That sex in animals is influenced by food is known to every cattle raiser in the American West who when he wishes a bull-calf starves the male before copulation: and it may be recalled that the theory of our Vienna *confrère* Schenck was based upon the same principle, hoping to determine the sex of the child *in utero* by the character of the food given the mother. Most strikingly however is the influence of nutrition on sexual development seen in the lower animals and insects: the sex of the bee is entirely determined by the size of the cell in which the ovule is placed and the amount of food given it: the queen-bee comes from a germ placed in a larger cell with abundance of food, the neuters are the sexually imperfect females formed when it is placed in a narrow cell with scant nutrition. Most strikingly has the Italian zoologist Grassi shown the influence of nutrition on sex development in the Termite tribe of ants, where we have not only the male and the female but also the neuter or the sexless worker, and these sexless

insects are divided into workers and soldiers, in the one organs of defence being more fully developed, in the others the parts used in labor. The nature of the domicile, temperature and nutrition determine sex and he claims that these insects develop at will more of one or the other sex, as the necessities of their civic organization seem to demand. These interesting experiments clearly demonstrate that sex development, like the time at which the human female matures, is *not due to a congenital adaptation*, but to an *innate plasticity* which renders possible adaptive modifications such as are suited to the surroundings and are determined by them, by conditions extraneous to the organism. I must here call attention to another most important point, *i.e.*, that in such insects there is only a *given period* in the development of the ovule *at which nutrition or temperature can influence* the development of one sex or the other; precisely the same is true of the time of pubertal development for the human female, the causes which influence such development can be effective only at a certain period and that is during the years preceding puberty (from the 10th to the 14th year). At this time residence in country or city, kind of occupation or food, nervous excitement or mental influence will determine an earlier or later development but the same factors in younger years would remain inert.

4.—*Mentality.*

Mentality, as I have termed the nervous and mental status of the girl, exercises perhaps the most powerful influence of all upon the time of development. The degree of education, or nervous sensibility, mental and nervous activity are among the most potent factors in determining the time of sexual maturity, as has been shown by an examination of thousands of cases in which it was evident that the period of development varied precisely with the perfection of the nervous organization and the degree of mental development; among people of a lower organization such as those at Pole and Equator, where mental development is at a minimum, the nervous organization alone can be considered, and this I believe even there to be a factor not to be overlooked.

5.—*Other Causes.*

Among the various other causes which influence pubertal development among civilized races, such as *heredity*, *social status* and *occupation*, there is but one which we need consider with reference to the age of puberty in these climatic extremes, and that is *sexual precocity*,

which I believe, especially among the Eskimos, may be looked upon as a determining influence. Where people are crowded closely in narrow huts, packed, often naked side by side under a heap of furs, it may be readily assumed that sexual desires are aroused at an early period, and it would appear, too, that passions are unusually fierce with the coming of the sun and the thawing out of all Nature which has remained torpid during long winter months. Reasonable as it may appear that precocious sexual excitement should lead to an early development of genital activity, observations in other lands apparently indicate the contrary.*

Among the Hindoos, where mothers seek by every means in their power to lead to an early sexual development of the female child, where marriage takes place in infancy and the child-wife is forced into the arms of the husband while very young, an exceptionally early menstruation does not seem to occur, yet it is earlier than where these conditions do not exist. Valuable data just received indicate that puberty, though not exceptionally early, is invariably *earlier* where marriage is precocious; thus, at 12.5 or 13 in Calcutta, and among the Brahmins in the Madras Presidency where child marriage is prevalent menstruation appears after the 13th year, while among the mass of the Hindoos in the same district it does not appear before 14; in South Burma, where 20 is the age of marriage, puberty appears at 14, and in North Burma where conditions are the same as in India, the age of first menstruation is likewise about

*March 13, 1903. Further investigation, especially a careful study of the conditions existing in India, where the question of pubertal age has been so much discussed and has assumed national importance by reason of its close connection with the subject of child marriage, has revealed facts sufficient to determine positively the influence of sexual precocity on pubertal development. The more important data bearing upon the subject will be found in Table II, part C, showing that the age of first menstruation in India as in Burma is at 14 if not over (at the earliest, between 13 and 14), yet where child marriage persists with its sexual precocity and a lascivious, premature conjugal life, puberty is earlier and menstruation more precocious, so that I no longer hesitate to express myself positively as to the dependence of one upon the other.

Another important point is positively established by the records received from the many castes and tribes of India: that the pubertal age in that sub-equatorial climate is not as early as it has been supposed to be—*not even as early as my limited data would make it appear*. My records show that 12.9 or 13 is about the earliest, but from the Madras Presidency we hear that none mature under 14 and from South Burma that 14 is the age of development. This convinces me more and more strongly that all the reports of puberty at 9 or 10 are *pure suppositions, without foundation in fact*.

the same period, 12-13. Certainly the Circassian or Albanian girl placed in the harem menstruates earlier than she does in her mountain home, and the Albanians, who are an unusually pure and virtuous people, though natives of a southern country, do not in their homes mature until their sixteenth or seventeenth year. All this would make it appear that lasciviousness and early or precocious sexual excitement would lead to early puberty, its obverse to retarded development; as one exception to this rule the negroes of Africa, who as a rule are a most lascivious people and sexually passionate, develop late. I have long been in doubt as to the influence of sexual precocity on pubertal development and when reading this paper I stated that a positive conclusion was not warranted with the facts then at hand. Continued study of the subject and more extensive observations have since convinced me that the promiscuous blending of the sexes, an early intermingling, lascivious habits, unquestionably tend to early sexual maturity and the appearance of the menstrual function at an earlier period than is to be expected among the same race or in the same individual under other conditions. I can now state with assurance that lasciviousness and sexual precocity, when prevalent among a people, tend toward an earlier puberty, not necessarily an earlier maturity.

As for other causes such as heredity; social status and occupation, which may be accorded a certain influence among civilized people, these cannot be considered in connection with the question of early or late puberty at Pole and Equator.

IV.—CONCLUSION.

Facts sufficient have been cited to prove the error of previous teachings of precocious puberty at the Equator and retarded development at the Pole. I have shown that puberty may come to the Eskimo as it does to the Hindoo at an early age, and late to the Somali at the Equator as it does to the Laplander in the North. In fact, early puberty is the rule in the Arctic regions rather than it is at the Equator. At both extremes we find races with early and races with late development, and if we draw an average of all the various statistical observations among the different races at Pole and Equator which I have here collected we find that puberty comes at 14.6 in the Arctic regions, nearer 15 in the Tropics, later still in the Temperate Zone of Europe (at 15.5). In the Temperate Zone of the New World, in the United States and Canada, development takes place at an earlier age and with more uniformity than in any other great belt, at 14 throughout.

An explanation I cannot as yet give, suffice it for the present that I present the facts, but these are in themselves of sufficient importance as they overthrow our preconceived ideas and the teachings of our text-books; no light is apparently thrown upon the question either by a study of pubertal development among the nations of civilization in the Temperate Zone, where the subject has been so carefully analyzed by many able authorities, nor is it by a study of climate and race; mentality and nervous stimulus, which is the all-powerful determining factor among civilized people seems in these extremes of temperature of Pole and Equator to be null and void. The mental and nervous condition of these people would appear as an element to be obviated, because it is practically the same among all and of the lowest order, which among civilized people is equivalent with retarded development. Nutrition and habitation and a lascivious life with early and constant mingling of sexes might appear to explain the early puberty of the Eskimo, who are carnivorous exclusively, the amount of meat and fat consumed, the close huts in which the greater part of their life is passed sweltering often at 90°, with a heat greater than that suffered by the natives of the Tropics, besides their racial connection with the Mongols of the South may be taken into account, and all would appear as tending to precocity; but an explanation for the retarded development of the natives of the Tropics is difficult to find, unless it be in their torpid nervous system. The "milieu," the surroundings, the "tout-ensemble" of all extraneous causes, so potent a factor in the races of our civilization, appears here to offer no explanation.

For the present it must suffice that we establish the facts in the case, causes which produce these apparently contradictory conditions must be determined by farther ethnological and physiological study of the various peoples habitating these inaccessible regions in the extremes of temperature at Pole and Equator.

EXPLANATION OF TABLES AND CHART.

Table I. demonstrates clearly the fallacy of the prevalent idea of retarded puberty in the far North and an exceptionally precocious development in Equatorial regions. It shows a comparatively early puberty in the icy regions of the North and retarded development in the Tropics.

I have indicated the mean age of pubertal development for the three great zones, but though it is evident that the figures upon which these means are based are not sufficiently large and do not cover all the different peoples of these regions they are suggestive and interesting

as indicative of conditions contrary to those hitherto supposed to exist. The only question is whether they are prevalent, but we must accept them as being so until other facts are proven. This table would show that at the Pole puberty is earliest at 14.6 years, latest near the Equator at 15.8, and in the Temperate Zone of Europe at 15.5, whilst in the New World development is throughout the Temperate Zone more precocious than in any other great belt, at 14.

The Individual Facts are correct, but the averages for the Pole are only suggestive though substantiated by numerous observations and records which place the age of first menstruation for the far North Eskimo at between 12 and 16, or 13 and 15, even between 12 and 14. I have presented the Arctic Indian, who is rather sub-Arctic, as an example because of these alone can I secure statistical record of larger numbers, and the same observer states that the Arctic Eskimo farther North are more precocious even.

TABLE II.—In this table I have arranged the most important of the statistical observations upon which this study is based in accordance with the mean annual temperature of the locality, not the latitude, though I note this more especially to indicate how much the isothermal lines vary from those of latitude.

I have classed as Arctic all regions with a mean annual temperature below 0° C. or 32° F. and as Tropic those with an annual mean above 25° C. or 78° F. which narrows both the Arctic and Equatorial belt somewhat, though very little.

The Temperate Zone is introduced for purpose of comparison and in order to indicate more clearly the peculiar conditions which exist. Part A of the table, the Arctic Zone, shows early puberty; as we reach Part B, the Temperate Zone and a milder climate with a mean annual temperature above 0° C. or 32° F., development is not earlier but very much later, varying apparently without rule or reason throughout the various climates of the Temperate Zone of the Old World until it reaches its Southern confines, nearing a mean annual temperature of 25° C. or 78° F. on the border of the Tropics, where we find the most precocious development, 12.5, the earliest statistically demonstrated, though 10 and even 9 is mentioned by travelers.

Following the table still farther we come to Part C. The Tropics proper with a mean annual temperature above 25° C. or 78° F., and it is apparent that puberty is not earlier, but much later than it was in the sub-Tropical regions, in the warmest part of the Temperate Zone. Development is much later in the Equatorial regions proper than it is in the southern portions of the Temperate Zone, as it is earlier in the

TABLE I.
AGE OF FIRST MENSTRUATION IN THE GREAT ZONES.

Arctic Zone, 14.6.

624 Cases.

OBSERVER.	CASES.	LOCALITY.	AGE.
Mathews	500	Arctic Indians	12.6
		Eskimo	13.0 to 15.0
Von Haven	100	Eskimo	16.0
Vogt	24	Quenas-Norway	15.2
			Extreme North Eskimo: 14.0. Mathews says 12.0 to 12.5.
			Childbed: 11.6 to 12.6, several at 13.0 and many at 14.0.

Temperate Zone.

Old World (Europe). 15.5.

58,737 Cases.

CASES.	LOCALITY.	AGE.	CASES.	LOCALITY.	AGE.
8,943	Denmark-Norway	16.5	7,887	France	14.6
21,258	Germany	16.0	6,337	Italy	14.8
12,287	England	15.0	2,025	Spain	14.2

New World (North America), 14.0.

10,331 Cases.

American, English, German, French, Negro: 13.6 to 14.3.

Tropics, 14.8.

2,733 Cases, including Sub-Tropic Region.

Sub-Tropics (India, 15°-25° N.), 1,140 Cases, Age 12.9 : Tropics Proper, 1,593 Cases, Age 15.8.

OBSERVER.	CASES.	LOCALITY.	AGE.	LATITUDE.
Campbell	104	Siam	14.3	13° N.
Mondière	1,244	Cochin China	16.6	11° to 17° N.
Roberton	77	Barbadoes-Demerara	15.6	6° to 13° N.
v. d. Burg	168	Batavia (Dutch descent).	14.6	8° S.
Heggemacher		Somali Land	16.0	0° to 10° N.
Munsinger		Bogos Land	16.0	0° to 10° S.

TABLE II.
AGE OF FIRST MENSTRUATION AMONG ALL RACES AND NATIONALITIES FROM POLE TO EQUATOR.

A. Arctic Zone.

Mean Annual Temperature below 0° C, or 32° F.

NATIONALITY.	CASES.	LOCALITY.	AGE.	MEAN ANNUAL TEMP. CENT.	MEAN ANNUAL TEMP. FAHR.	LATITUDE.	OBSERVER.
Eskimo	10	Alaska	13.0 to 14.0	-12.8°	9°	70°	Heustis.
Eskimo	100	Greenland	15.0 to 17.0	-8.0°	17°	60°	v. Haven.
Eskimo	16	Labrador	15.9	-6.0°	22°	55°	Lundberg.
Eskimo	10	Boothia Felix	All over 14	are married.			Sir J. Ross.
Indians	500	Hudson Bay	12.6	-4.0°	25°	50°	Mathews.
Eskimo		Farther North	12.0 to 12.5				Mathews.
Kamtschadales		Kamtschatka	Very early				de Lesseps.
Koriaks			Often Mothers	at 10.			v. Humboldt.
Slavonians			12.0 to 13.0	-5.0°	23°	60°	Tooke.
Quenas	24	Norway	15.0	-1.0°	30°	65°	Vogt.
So. Amer. Indians		Fireland	14.0 to 15.0				Hyades & Deniker.

B. Temperate Zone.

Mean Annual Temperature, 0°-25° C. 32°-78° F.

NATIONALITY.	CASES.	LOCALITY.	AGE.	MEAN ANNUAL TEMP. CENT.	FAHR.	LATITUDE.	OBSERVER.
Lapps	116	Norway	16.7	0.0°	32°	60° to 65°	Vogt.
Finns	3,500	Finland	15.8	1.8°	35°	60° to 65°	Heinricus.
Finns	3,500	Finland	15.1	1.8°	35°	60° to 65°	Engström.
Esthonians		Russia	17.0	4.0°	- 39°	58° to 60°	Holst.
Russians	2,371	St. Petersburg	14.6	4.0°	39°	60°	Weber.
Russians	17,439	St. Petersburg	16.5	4.0°	39°	60°	{ Tarnowski. Radzewitz.
High Class { Low Class }		St. Petersburg	{ 15.5 } { 17.5 }	4.0°	39°	60°	Horwitz.
Russians	700	Kaluga	17.0	4.8°	40.6°	55°	de Ott.
Norwegian	4,731	Norway	16.3	0.0° to 7.0°	32° to 44°	58° to 70°	Faye-Vogt.
French	876	Canada	{ 13.6 } { 14.2 }	5.0°	41°	45°	{ Prévost. Laph. Smith.
English	1,020						
German, North	3,000	Konigsberg	16.0	6.4°	43°	54°	Lullies.
German, South	15,708	Munich	16.2	7.0°	45°	48°	Hecker-Schlichting.
Dutch	862	Holland	16.6	8.7°	47.7°	53°	Evers.
American { College Work }	2,752 } 2,503 }	Boston	{ 13.6 } { 14.3 }	9.0°	48°	52°	Engelmann.
German	7,830	Berlin	15.5 to 16.3	9.1°	48.3°	52°	{ Mayer. Krieger & Marcuse.
Austrian	{ 10,000 1,610 }	Vienna Austria	{ 15.5 } { 16.3 }	9.3°	48.8°	48°	{ Chrobak. Szuikla.
English	12,287	{ London Manchester }	15.0	9.5°	49°	51° to 53°	{ Guy, Tilt, Lee, Whitehead & Robertson.

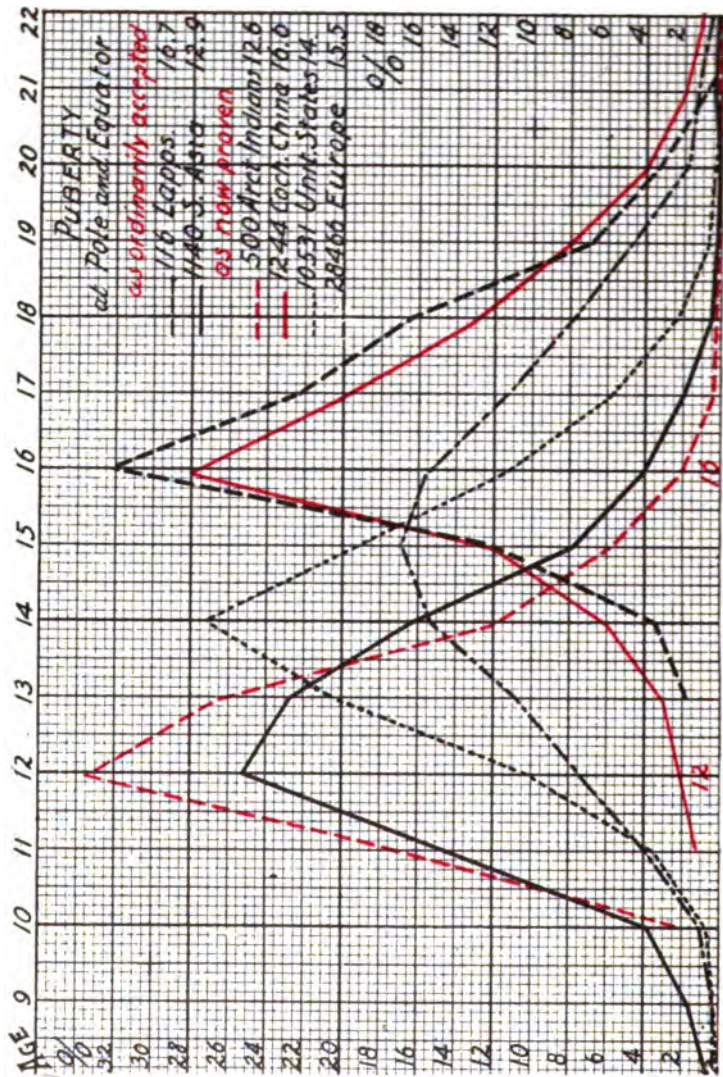
French	3,322	Paris	15.0	10.4°	51°	48.5°	{ Dubois de Soire de Boisimont.
American	2,330	New York	14.2	10.8°	51.4°	39.4°	Emmet
Armenian		{ Armenia Constantinople }	17.0 to 18.0 14.0 to 15.0 }	11.6°	53°	39° to 41°	Zambaco.
North Italian	992	North Italy	14.6	13.0°	55°	44° to 46°	Rasari.
American	2,315	St. Louis	14.2	13.0°	55°	38.4°	Engelmann.
Japanese	684	Tokio	15.6	13.5°	56.3°	38.4°	Moryasu.
Spaniard	{ 2,025 403 }	{ Madrid and Spain }	{ 14.2 15.0 }	13.6°	56.5°	41°	{ Gutierrez. Seco Baldor.
Negro	2,339	{ St. Louis Baltimore New Orleans }	14.0	13.0° to 20.0°	55° to 68°	29° to 39°	Engelmann.
Italian	3,011	Rome	14.9	15.4°	59.7°	42°	Rasari.
Greek { High Class Low Class }		Athens	{ 15.0 to 17.0 13.0 to 15.0 }	17.3°	63°	38°	Coromilas.
South Italian	1,111	South Italy	14.8	19.0°	66°	37° to 41°	Rasari.
Portuguese	228	Madeira	15.4	20.3°	68.5°	32°	Dyster.
Negro	884	New Orleans	14.0	20.4°	68.8°	29°	Clark-Miller.
Negro		Egypt	10.0 to 13.0 (?)				Pruner.
Arab		Egypt	10.0 to 12.0 (?)				Niebuler.
Arab		Algiers	9.0 to 10.0 (?)				Berthereaud.
Egyptian		Achim	10.0 (?)	20.5°	69°		Zambaco.
Egyptian		Egypt	9.0 to 10.0 (?)				Riegler.
Egyptian		Bagdad	10.0 to 11.0 (?)	23.0°	73°	33°	Zambaco.
Hindu	71	Bangalore	13.2	22.7°	72.3°	33.2°	Crisp.

C. Tropics. Equatorial Belt.

Mean Annual Temperature above 25° C. or 78° F.

NATIONALITY.	CASES.	LOCALITY.	AGE.	MEAN ANNUAL TEMP. CENT.	LATITUDE.	OBSERVER.
Hindu	239	Calcutta	12.5	85.7°	23°	Hosua & Gaudlove.
*Hindu { Luxurious Classes }		Calcutta	Nearer 12.0			
*Hindu { Peasants & Laborers }		Central & West India	Not before 13.0			Kallen Huse
*Hindu { }	5,000	Madras Presidency	{ 14.0 to 15.0 13.0 to 14.0 }		12° to 13°	Rammay Roy.
*Brahmin (marry early)						
*Brahmin	65	Calcutta	13.5			Chunder Sen.
*Hindu	27	Calcutta (Orph. Asyl.)	13.9			Payer.
*Hindu		Calcutta	12.0 to 13.0			Rammay Roy.
*So. Burmese (marry late)		South Burma	14.0		20° to 22°	Devendro Roy.
*N. Burmese (marry early)		North Burma	12.0 to 13.0		22° to 24°	Devendro Roy.
Dutch	168	Batavia	14.6	26.0°	8° S	v. d. Burg.
Siamese	104	Bangkok	14.5	26.7°	13.6°	Campbell.
Negro	77	Jamaica & Barbadoes	15.6	27.0°	13° to 18°	Robertson.
Hindu	129	Bombay	13.6	26.7°	18.5°	Letell.
Annamite Cambodian }	1,244	Cochin China	16.6	27.2°	11° to 17°	Montlère.
Negro, African		Somali Land	16.0	30.0°	0° to 10°	Heggemacher.
Negro, African		Rogos Land	16.0	30.0°	0° to 10° S	Munsinger.
Negro, African		Loango	14.0 to 15.0			Falkenstein.
Negro, African		Borabra	15.0 to 19.0			Hartman.

* These are the data recently received to which I refer in foregoing foot-note and addenda.



Polar regions than it is in the northern part of the Temperate Zone. Were we to consider only Part B, the Temperate Zone, it would appear that development is earliest in warm, later in cold climates, in a general way, yet conditions in the extremes, in the Arctic and Equatorial belt completely overthrow any such theory and would, in fact, appear to make the contrary seem true.

CHART I.—The red lines indicate the age of pubertal development in Polar and Equatorial regions as my investigations reveal it. The broken red line is that of the Arctic region with an early puberty; the solid red line represents the late development in the Equatorial belt.

Directly contradictory are the conditions in sub-Arctic and sub-Tropic regions, the solid black line representing the age of development in India which is almost sub-Tropical and an exception to Equatorial conditions with early puberty; the broken black line is that of the Lapps, sub-Arctic, both showing conditions which were formerly supposed to be those prevalent in Tropic and in Arctic belts. Again, for purposes of comparison, I have introduced the Temperate Zone of the Old and the New World, the broken and dotted the Old, the simply dotted line the New World, both between the extremes of both Arctic and sub-Arctic and Tropic and sub-Tropic.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

The *President*, Dr. EGBERT H. GRANDIN, in the Chair.
Stated Meeting, January 13, 1903.

RUPTURED TUBAL PREGNANCY.

Dr. S. MARX presented such a specimen, which had ruptured at about the eighth week. The intact fruit sac could be seen hanging by its secundines to the ruptured opening, which was choked with chorionic villi. Besides illustrating many embryonic features, the history was unusual, as there had been no uterine hemorrhage.

SPECIMENS, DEMONSTRATING VARIOUS TYPES OF PELVIC DISEASE; INFLAMMATORY AND NEOPLASTIC.

Dr. HERMAN J. BOLDT presented the following specimens:

1. Five separate cystic tumors, removed from a patient who had been suffering for eight years from pains in the abdomen.
 - a. An unilocular ovarian cyst of the right side to which the appendix was adherent.
 - b. Hydrosalpinx of the uterine end of the left tube.
 - c. Pyosalpinx of the outer end of the same tube.
 - d. Ovarian abscess of the left side.
 - e. Secondary omental abscess.
2. Foreign body in the appendix. A thickened appendix, removed in the course of a ventral suspension of the uterus, containing a piece of egg shell.
3. Rupture of the uterus from a sloughing fibroid. A sloughing submucous fibroid through which were three openings that had been made by a curette four days previous to an abdominal hysterectomy for diffuse septic peritonitis. Temporary improvement had been followed in two days by a reappearance of a fatally terminating sepsis, which Dr. Boldt thought might have been prevented by the use of a glass tube instead of gauze in the vaginal opening and by an additional tube in the epigastric region. In this way the abdominal cavity could have been thoroughly flushed with normal saline solution. In the discussion which followed, Doctors Goffe, Barrows and Dudley recalled cases in which intestines had been pulled down through an opening made by a curette. Dr. Malcolm McLean considered such an accident possible in the hands of a competent surgeon. Dr. S. Marx recalled two cases of

sloughing fibroid following labor, which he had successfully removed per vaginam.

4. Fatal hemorrhage from a ruptured ovarian cyst. The wall of a ruptured ovarian cyst was shown, within which was a secondary ruptured cyst. The hemorrhage had come from some large vessels within its walls.

5. Intestinal paresis. A carcinomatous uterus was presented which had been removed by abdominal hysterectomy. Death followed upon the fifth day from an intestinal paresis of such degree that the abdominal wound was ruptured; which could only be closed by first opening the small intestine to allow gas and feces to escape. In the discussion which followed, Dr. Brooks H. Wells had seen a high enema, consisting of an ounce of alum in a quart of hot water effective when all other measures had failed. Dr. E. H. Grandin had not been successful with the use of the alum solution, but had seen one case in which large doses of hydrobromate of hyoscine had seemed to be of value.

6. Abdominal myomectomy. A large interstitial myoma removed through the abdomen because of its large size and the smallness of the vagina.

7. Procidentia: frequently recurring edematous hyperplasia: hysterectomy. An elderly woman, suffering from procidentia, had recurrent hemorrhages in spite of several curettings which had been performed during the year prior to the hysterectomy. In the discussion which followed, Dr. Ralph Waldo said he had successfully used a strong solution of silver nitrate for a similar condition, which had resisted all other forms of treatment.

LARGE SUBMUCOUS FIBROID.

Dr. J. RIDDLE GOFFE presented a very large specimen of this form of tumor, which he had removed by supra-vaginal hysterectomy from a patient suffering from hemorrhages.

SAC OF A RUPTURED OVARIAN CYST.

Dr. GOFFE also presented the wall of an ovarian cyst, which was much thickened from inflammatory changes. The patient, who had noticed for nine months a rapid increase in the size of the abdomen, presented herself with a markedly distended abdomen. She had fallen from a hammock six months previously, causing her considerable pain and general discomfort for several days. The abdomen was found at operation to be filled with blood and the contents of the ruptured tumor.

DISCUSSION.

Dr. BARROWS recalled two cases in which tumors, rupturing during an ordinary examination, were demonstrated by operations.

Dr. GEORGE W. JARMAN related the history of a case, in which a cyst that had been ruptured during an examination, was not operated upon and no reappearance was observed during the following eighteen months.

Dr. HERMAN J. COLLYER recalled a case which refilled within two weeks after a rupture during an examination.

Dr. HERMAN J. BOLDT had seen two such cases—one not operated upon with no reappearance.

Dr. A. PALMER DUDLEY thought that in all cases in which a rupture was reasonably certain, an operation should be performed.

Dr. JANVRIN related the history of a case in which the tumor had ruptured into the bladder.

INTRAVENOUS INFUSION OF FORMALIN SOLUTION FOR PUERPERAL SEPTICEMIA.

Dr. BARROWS related the history, and presented the pulse and temperature chart of a case of severe septicemia, following the expulsion of a macerated fetus. Upon the tenth day with the temperature 108° F. per rectum and a pulse rate of 160, about 500 c.c. of a 1 to 5000 solution of formalin was injected intravenously with rapid and marked improvement of the pulse, temperature and general condition. Upon the thirteenth day, with a temperature of 103° F. and a pulse rate of 110, 750 c.c. of the same solution was again injected, after which the temperature fell to normal and an uninterrupted convalescence followed. Blood cultures made the day before the first infusion showed a pure growth of streptococci; two cultures, made after the infusions, were negative.

DISCUSSION.

Dr. W. S. STONE thought it would be wisest to accept this case as one case, but before trying this treatment in other cases, thought further animal experimentation would be more in the spirit of scientific investigation.

Dr. W. E. STUDDIFORD mentioned the remarkable results of Webster at McGill University with the use of a 1 to 5000 and 1 to 1000 formalin solution for irrigating the peritoneal cavity and for injections beneath

the skin. He also recalled a case in which hypodermoclysis with normal salt solution was quickly followed by marked improvement. Blood cultures in this case were negative but streptococci were present in the uterus.

Dr. A. PALMER DUDLEY thought that the curative power of the formalin could not be determined if local treatment of the uterus had also been employed; he also wished to offer the opinion that intrauterine irrigations in this class of cases were harmful.

PRESENTATION OF INSTRUMENTS.

Dr. J. CLIFTON EDGAR presented the following instruments:

1. A return-flow glass catheter for intrauterine irrigation, made with two pieces of glass tubing, each grooved upon the inner surface in such a way as to increase the area for the return flow.
2. Bossi Dilator. Dr. Edgar demonstrated its use upon a rubber model of a partially dilated cervix. He had hesitated to use it, preferring to rely upon the tactile sense of his finger. He thought the two-bladed dilator of Gans to be preferable because a hand could be simultaneously inserted into the vagina to note the amount of force exerted by the dilator upon the cervix.

WILLIAM S. STONE, *Editor.*

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF PHILADELPHIA.

STATED MEETING, FEBRUARY 5, 1903.

The *President*, DR. JOHN M. FISHER, in the Chair.

THE ETIOLOGY OF ECLAMPSIA.

Dr. CHARLES S. BARNES stated that the causative factor or factors are unknown. Attention was called to the various theories which have been set forth. The rational conclusion has been reached that the immediate cause of eclampsia is a systemic affection, an auto-intoxication. These toxins are probably animal alkaloids. There is no ground for the belief in a bacterial source of the disease. The commonly accepted theory is that toxemia is the result of a vice of constructive and destructive metabolism. The quantity of urea excreted is the best index of metabolism. The kidneys, while sometimes a contributing factor, often, instead, suffer the consequences of toxemia. There is

strong ground for the belief that the liver is the most important of the excretory organs, and that the urea index is significant of the functional activity or inactivity of the liver, rather than the kidneys. Numerous predisposing and contributory causes were enumerated. Emphasis was laid upon these causes, such as are so imprinted upon the excretory and nervous systems of every toxemic patient, that any intelligent practitioner of medicine may read them, and having read, may employ successfully prophylactic treatment of eclampsia.

THE TREATMENT OF ECLAMPSIA.

Dr. WILMER KRUSEN gave statistics showing the great necessity for further knowledge of this alarming complication of labor. To insist dogmatically upon a definite and undeviating method of treatment for this or any pathologic condition is to confess ignorance of therapeutic agencies, since what is exactly adapted to one case may be futile or damaging in another. He divides the treatment of eclampsia into (1) prophylaxis; (2) treatment of convulsions; (3) treatment during intervals; and (4) after treatment. Prophylaxis is directed to the prevention of convulsions and the strengthening of vital processes. The amount of urea excreted is considered the best guide, and when it falls below 1.5 per cent there should be stimulation of all excretory processes. The liver and the intestinal tract should be stimulated by the administration of frequent and small doses of calomel, 1-10 grain 3 times daily for 1 or 2 weeks. Caffeine in 3 grain doses, 3 times daily, may be given for diminution of urine. If there is high arterial tension, nitroglycerin in full doses is indicated. Attention is called to the connection between the inadequate action of the thyroid gland and the arrest of renal secretion, quoting Nicholson, who has given thyroid extract in eclampsia with favorable results, and advises that it be given in 5-grain doses, night and morning, and that proteid foods be avoided. The author believes that upon a thorough investigation of the relationship between the thyroid gland and pregnancy depends much of the future success in the prophylaxis of eclampsia. In the treatment of the convulsions chloroform is the anesthetic par excellence. Ice bags to back of the neck and head are of decided value. In the treatment during the intervals one of the most important measures is venesection. It is indicated when the pulse shows high arterial tension, and is full, rapid and bounding; and the face of the patient is suffused or almost cyanotic. In such cases it rescues the patient from impending pulmonary edema and apoplexy; and it also abstracts a large amount of noxious principles from the system, and will do more for the relief of the

patient than any one other procedure. By using copious injections of normal salt solution the depressing effect of the bleeding can be counteracted and the unknown toxins diluted. In regard to obstetric treatment, rapid delivery of the fetus is advocated. The high mortality of Cesarean section leads him to condemn that operation unless some condition such as pelvic deformity prevents the vaginal delivery. Mechanical dilatation of the cervix, either manually or with dilating bags, or deep cervical incisions, properly performed under rigid antisepsis, is the best method of procedure.

DISCUSSION.

Dr. RICHARD C. NORRIS emphasized the following practical points: Urinalysis is important, but it must go hand in hand with personal interviews with the patient, in order to note the first signs of approaching toxemia; that the use of prophylactic measures includes as most important of all diet and attention to the woman's liver, and that among the means of elimination of toxins during pregnancy, the use of the intestinal canal is most valuable. For the control of convulsions he speaks in the most praiseworthy terms of *veratrum viride*. Free saline purgation is also of value. In an experience of 10 years, averaging 8 to 10 eclamptics each winter, he has yet, with but one exception, to see a patient die who responded to the free use of saline purges, in conjunction, of course, with other treatment. Speedy delivery is not always to be desired. Only in the gravest cases is this advisable, and then instrumental dilatation of the cervix offers the safest and the best means of delivery.

Dr. STRICKER COLES believes that at least 90 per cent of the cases of eclampsia can be prevented. He described the following three forms which he has seen clinically. One beginning with Bright's disease, of which he has seen eight to ten, without any deaths; the babies in these cases are hard to raise, he has lost some before and some after birth. The second form is that from toxemia. The third form he describes as fulminating eclampsia. This has been brought on by eating a large amount of indigestible food. He has seen two or three cases which come under this variety; these cases have no previous histories, but after having eaten some indigestible food have had more or less indigestion and have gone into eclamptic convulsions without any apparent toxemic symptoms. The more quickly the child is delivered without undue violence the better.

Dr. JOHN C. DACOSTA believes in rapid delivery, and venesection.

Dr. L. J. HAMMOND asks the question, would it not be good practice to do the operation of decapsulation as a radical prophylactic measure

at the sixth or seventh month, or as early as could be done, if one felt confident that the kidney change existed prior to the pregnancy?

Dr. OLIVER HOPKINSON considers that the thyroid treatment opens up a new field, which we ought to try on account of its harmlessness. Oxygen is superior to chloroform, and chloral should be combined with morphia.

Dr. G. M. BOYD empties the uterus, and uses chloral and morphia with chloroform for the convulsions, but is still doubtful as to the efficacy of any medication in this disease.

Dr. D. LONGAKER lays stress upon first treating the convulsions, treating the case medically, then afterwards surgically; but by all means arrest the convulsions before emptying the uterus. Veratrum viride systematically employed gives the best results. For free purgation elaterium is to be preferred.

CHARLES P. NOBLE, *Editor.*

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

MEETING, FEBRUARY 6, 1903.

The *President*, DR. G. WYTHE COOK, in the Chair.

PLACENTA PREVIA.

Dr. JOHN F. MORAN read a paper with the above title, in which he reported 16 cases occurring in 5,000 labors in Columbia Hospital (Washington, D. C.) with one maternal death and six infants lost. Thirteen were of the marginal or partial variety and three complete. The maternal death was due to post-partum hemorrhage following version in complete previa. He also gave five cases occurring in his own practice with one maternal death and three infant mortality, all of which were dead when cases came under observation. Two were marginal, one partial, and two complete. Two were treated by version and one died; one by high forceps; one (fifth-month gestation) by tampon, and one by the expectant plan. He has also collected sixteen cases of Cesarean section for placenta previa operated upon by thirteen different operators. Five mothers died, 31.5 per cent; four children, 25 per cent. He said there is no fixed line of treatment. Varying results will be obtained, according to the exigencies of the case, methods used and the skill of the operator. If the cervix is dilated or dilatable and the

head within grasp, forceps are indicated; if head is above brim and with same conditions of cervix, internal version is the proper procedure. In central variety, bi-polar method should be adopted. When tampon is used possible concealed hemorrhage should be borne in mind. The statistics thus far reported for Cesarean section are not very encouraging, though most of the cases were in unfavorable condition from repeated hemorrhage and the operation was performed as a *dernier resort*. Regarding the absolute and relative indications for Cesarean section in placenta previa, it is yet too soon to formulate any fixed rule for guidance; future experience can alone determine.

Dr. T. C. SMITH said it had been stated by some one within a short time that there was nothing new to be learned in obstetrics; that the practice of that art was simply one of dynamics and asepsis. And yet this evening an interesting paper had been presented to the Society on one of the most important questions in obstetrical practice, and it was doubtful whether any two members present were agreed upon the treatment of placenta previa, notwithstanding the extended consideration which had been given the subject. He had met with seven or eight cases of placenta previa—had saved some mothers and some children. Each case had been treated according to the indications present at the time he was called. No tight and fast rule would apply to all cases. In former years, when a placenta previa was discovered in which no very active symptoms were presented, it was the custom for the attending physician to advise the family of the patient in his absence to send for the nearest physician on the appearance of hemorrhage, and he usually sent for another, and delivery was hastened in the interest of the mother. He did not think it good practice to rupture the membranes and trust to uterine contractions to arrest hemorrhage by forcing the fetus against the bleeding surface. That practice would hold if the contractions of the uterus were continuous, but inasmuch as they were followed by relaxation, which permitted hemorrhage, he thought it better to save the membranes until dilatation had been effected by suitable means, and then complete delivery by turning. Of course, that plan could only be used in suitable cases. In his last case, which occurred in a private patient in one of the hospitals, the hemorrhage began as soon as the lady reached the hospital, and before pain began. He was at once notified that his patient had lost about a pint of fresh blood. On making an examination the os was found soft and patulous, but not dilated. The flow of blood had ceased. He decided to await developments, which came in about twenty minutes in the form of a flooding. The patient was anesthetized and the os rapidly dilated

with the hand. When dilatation was completed turning was effected and the child speedily removed, but it could not be resuscitated. The mother recovered without any unpleasant symptoms. The other patients were treated as their symptoms demanded, and he was sure he would have saved at least two more mothers if efficient assistance could have been secured. Placenta previa is a fearful complication, always endangering the life of the mother and child.

Dr. MILLER referred to the Bossi dilator, designed for rapid dilatation of the cervix for delivery in such cases.

Dr. MORAN closed the discussion by saying that hemorrhage, sepsis, and rupture of the birth tract are the important dangers in placenta previa. The first is controlled by tampon, efficiently applied, the second by careful aseptic detail, and the third by proper method of intervention. The essayist does not agree with Dr. Smith regarding the tampon and water bag. They form very valuable adjuncts in the treatment, particularly after hemorrhage, enabling the patient to be put in better condition for delivery. The high mortality is in a great measure due to attempt to deliver patient while in state of collapse. He is not sanguine as to the future of Cesarean section for the reason that cases are rarely diagnosed before hemorrhage, and the dangers of post-partum hemorrhage would seem to be greater than after operative measures. Gillette found it necessary to extirpate the uterus after doing a Sanger operation because of this complication.

J. WESLEY BOVÉE, *Editor*.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

MEETING, FEBRUARY 20, 1903.

The *President*, DR. G. WYTHE COOK, in the Chair.

DERMOID CYST OF THE OVARY.

Dr. BALLOCH showed a specimen taken from a colored woman, married, 27 years of age. The history was that she had had no trouble of any kind until after the birth of her first and only child, seven years ago. Since that time there had been constant pain in the left lower quadrant of the abdomen and in the back. The pain was always worse just before menstruation and after any exertion. Menstruation regular and normal, except for the pain. Examination showed a normal uterus,

to the left of which lay an oval mass, 6 cm. long. Right tube and ovary normal. From the history and the position and feeling of the mass a diagnosis of salpingitis was made. Operation, February 16, 1893. When the abdomen was opened the enlargement was seen to consist of the left ovary entirely, the tube being smaller than usual. Left tube and ovary removed. The specimen shows the usual elements of a dermoid, epithelial debris, black hair and a curved plaque of bone, 15 mm. in diameter. As this teratoma contains hair and bone, in addition to epithelium, it must have been derived from an epiblastic matrix after its differentiation.

FIBROID TUMORS OF THE UTERUS.

Dr. BOWEN presented some specimens removed with the body of the uterus, both tubes and one ovary. The patient menstruated precisely as before operation. He also presented a specimen of several fibroids removed from the fundus during pregnancy, and the woman was delivered at full term. He also presented two specimens of vermiform appendix. In both these cases numerous attacks of appendicitis had preceded operation. In the last attack in each case the symptoms were marked and the presence of a tumor in the region of the cecum distinct. When the attacks were passed he operated and was surprised so little evidence of the former inflammatory condition was present. In one the adhesions were but slight and fragile, and in the other no outer evidence of disease was present. The mucosa, however, showed marked inflammatory changes. He desired an explanation of these cases.

Dr. BOVÉE said he was sure in exceptional cases a considerable mass of exudate about an inflamed vermiform appendix could be absorbed and a symptomatic cure of the attack follow. He believed this might occur even when pus was present. He referred to a case of this character in which he had seen the young lady in question in consultation in her second attack—a severe one—about eight months before operation just after the fourth attack, and found an appendiceal abscess with little involvement of the appendix. He was led to believe the pus had been present eight months. When the uterine body is removed in women under forty years he believed it better for the patient to remove the Fallopian tubes, even if the ovaries are not removed. If ovarian tissue and the cervix are left menstruation will continue about normal, judging from his experience. When the appendages are removed and the uterus left, uterine hemorrhage occurs in case the menstrual habit

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Dr. BOWEN, closing, said the flow from the cervix must be regarded
as different the same as from lungs, stomach, sub-ungual surfaces,
etc. In one case after hysterectomy the woman menstruated 5 days
regularly from the bowel for a number of months.

BOWEL OBSTRUCTION DUE TO "MECKEL'S DIVERTICULUM."

Dr. STONE reported a case which had been relieved by operation. The
patient, a lady thirty years of age, had suffered from four previous at-
tacks, which had yielded to the usual medical treatment. In the present
instance the obstruction had resisted treatment for four days, and opera-
tion was imperative. The obstruction was partly due to a torsion of
the mesentery in the present instance, which had completely occluded
the bowel at the narrow isthmus just above the diverticulum. After re-
lieving the intestines from their false position, and evacuating the excess
of liquid fecal matter which distended them, a Murphy button was used

an anastomosis, connecting the distended bowel with that below it, which gave very satisfactory results, as the patient had no single bad symptom.

MINOR TUMORS OF THE ROUND LIGAMENTS.

Dr. Sanger had a paper with this title in which he referred to the rare disease of this structure the etiology of which was in doubt. In diagnosis, fully as much doubt had existed. Growths springing from this portion of the round ligament are mistaken for salpingitis, pus tubes, ovarian or parovarian growths, broad ligament tumors and even pedunculated fibroids of the uterus. The symptomatology of them is very similar. These growths have been most frequently mistaken for the various forms of the incarcerated hernias or localized lymphatic neoplasms and the error has been proven by operation. Sanger reports a case of fibro-sarcoma of the round ligament which terminated fatally in consequence of an incorrect diagnosis. Briefly, it was that of a young woman, 17 years of age, with a small tumor in the right groin. Hernia was diagnosed and a truss advised, which she wore for four years and then had to abandon it from pain. The tumor was then the size of an infant's head. Cysto-fibroma was then diagnosed, but changed to fibro-sarcoma after operation and microscopical examination. The patient did not survive the operation (*Arch. Gynak.*, 1883, xxi, p. 278-308). Two specimens here presented are myxo-fibroma. The first was removed from a white woman, 28 years of age, who had been married 11 years, and never pregnant. She had a tumor the size of a walnut in the right groin, and extending into the labium majorum, which was first noticed 11 years ago, when it was about half its size at the time of operation. An examination revealed a firm, knotty mass over the external abdominal ring, extending down into the right labium majorum. It was free from the skin, but anchored to its site. No impulse on coughing and no history of its having been reduced; no nausea or sickening sensation on pressure; no history of bowel obstruction and no tympany. It was tender on pressure. The lymphatic glands were not enlarged. The tumor was not influenced by menstruation. At the operation a bunch of grapelike bodies were found attached firmly to crest of the pubes along the insertion of the round ligament in which it had developed. Dr. Wallace Johnson examined it microscopically and pronounced it myxo-fibroma.

The other specimen was removed from a white woman, 37 years of age, the mother of four children. All labors were easy except the last, when she was carrying a large ovarian tumor. It was at the time of re-

is well stamped on the individual, or such conditions as metritis, marked endometritis, malignant disease or fibroid degeneration of the uterus be present.

Dr. STONE suggested small growths in the uterine fundus which do not interfere with pregnancy, or labor might be left *in situ*, particularly if no degeneration in them be present. He was removing the vermiform appendix more frequently when the abdomen was opened for other conditions than formerly, and was led to do this from studying the mucosa of such removed appendices, although he did not remove them as frequently as Dr. Bovée.

Dr. J. T. KELLEY said he did much less abdominal surgery than those having large hospital services, but in his few cases during the past few years he has known of two cases of severe attacks of appendicitis in patients in which he has made an abdominal section for other conditions. In one a ventro-suspension and curettage had been done, and in the other a section had been made to ascertain the cause of sterility. In one he was obliged to remove the vermiform appendix during a sharp attack of inflammation one month after former operation. The other died without operation in Maryland. These cases led him to believe removal of the appendix, when the abdomen is opened for other conditions, is a splendid working rule.

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EXTRA-ABDOMINAL TUMORS OF THE ROUND LIGAMENTS.

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INDEX OF CURRENT LITERATURE.

J. WESLEY BOVÉE, M.D.

CHARLES S. WHITE, M.D.

GEORGE K. BAIER, M.D.

Key to periodicals to which reference is made by numbers.

1. Alabama Medical Journal. Birmingham.
2. Albany Medical Annals.
3. American Journal of the Medical Sciences. Philadelphia.
4. American Journal of Obstetrics. New York.
5. American Medical Compend. Toledo, O.
6. American Medicine. Philadelphia.
7. American Practitioner and News. Louisville.
8. American Surgery and Gynecology. St. Louis.
9. Annales de Chirurgie et d'Orthopédie. Paris.
10. Annales de Gynécologie et d'Obstétrique. Paris.
11. Annals of Gynecology and Pediatrics. Boston.
12. Annals of Surgery. Philadelphia.
13. Archiv für Gynäkologie. Berlin.
14. Archiv für Klinische Chirurgie. Berlin.
15. Archives de Neurologie. Paris.
16. Archives Provinciales de Chirurgie. Paris.
17. Archivio di Ostetricia e Ginecologia. Napoli.
18. Archivos de Ginecología, Ostetricia y Pediatría. Barcelona.
19. Atlanta Journal-Record of Medicine.
20. Australasian Medical Gazette. Sydney.
21. Beiträge Zur Geburtshilfe und Gynäkologie. Leipzig.
22. Beiträge Zur Klinischen Chirurgie. Tübingen.
23. Berliner Klinische Wochenschrift.
24. Boston Medical and Surgical Journal.
25. Botkin's Gazette. St. Petersburg.
26. Brazil Medico. Rio De Janeiro.
27. Bristol Medico-Chirurgical Journal.
28. British Gynecological Journal. London.
29. British Medical Journal. London.
30. Brooklyn Medical Journal.
31. Buffalo Medical Journal.
32. Bulletin de L'Académie de Médecine. Paris.
33. Bulletin of the American Academy of Medicine. Easton, Pa.
34. Bulletin of the Johns Hopkins Hospital. Baltimore.
35. Bulletin Société Belge de Gynécologie et d'Obstétrique. Bruxelles.
36. Bulletin Société de Chirurgie de Lyon.
37. Bulletin Société de Obstétrique. Paris.
38. Bulletins et Memoirs de la Société de Chirurgie. Paris.
39. Bulletins et Memoirs de la Société Obstétrique et Gynécologique de Paris.
40. Canada Lancet. Toronto.

41. Canada Medical Record. Montreal.
42. Canadian Journal of Medicine and Surgery. Toronto.
43. Canadian Practitioner and Review. Toronto.
44. Carolina Medical Journal. Charlotte, N. C.
45. Centralblatt für Chirurgie. Leipzig.
46. Centralblatt für Innere Medicin. Leipzig.
47. Centralblatt für Gynækologie. Leipzig.
48. Charlotte Medical Journal.
49. Chicago Medical Recorder.
50. Cincinnati Lancet-Clinic.
51. Cleveland Medical Journal.
52. La Clinica Chirurgica. Milano.
53. La Clinica Ostetrica. Roma.
54. Clinical Journal. London.
55. Clinical Review. Chicago.
56. Colorado Medical Journal. Denver.
57. Columbus Medical Journal.
58. Comptes Rendus de la Société d'Obstétrique, de Gynécologie et de Pædiatrie de Paris.
- 59a. Correspondenz-Blatt für Schweizer Aerzte. Basle.
- 59b. Deutsches Archiv. f. klin. Medicin. Leipzig.
60. Denver Medical Times.
61. Deutsche Medicinische Wochenschrift. Leipzig.
62. Deutsche Zeitschrift für Chirurgie. Leipzig.
63. Dominion Medical Monthly. Toronto.
64. Dublin Journal of the Medical Sciences.
65. Edinburgh Medical Journal.
66. L'Egypte Medicale. Alexandria.
67. Fort Wayne Medical Journal-Magazine.
68. Der Frauenarzt. Leipzig.
69. Gazette de Gynecologie. Paris.
70. Gazette Hebdomadaire des Sciences Médicales de Bordeaux.
71. Gazette des Hôpitaux de Paris.
72. Gazette Degli Ospedali e delle Cliniche. Milano.
73. Georgia Journal of Medicine and Surgery. Savannah.
74. Giornale Internazionale delle Scienze Mediche. Napoli.
75. Glasgow Medical Journal.
76. La Gynécologie. Paris.
77. Hospitalstidende. Copenhagen. Kobenhavn.
78. Hot Springs Medical Journal.
79. Illinois Medical Journal. Springfield.
80. Indian Lancet. Calcutta.
81. Indian Medical Gazette. Calcutta.
82. Indiana Medical Journal. Indianapolis.
83. Intercolonial Medical Journal of Australasia. Melbourne.
84. International Journal of Surgery. New York.
85. International Medical Magazine. New York.
86. Interstate Medical Journal. St. Louis.
87. Iowa Medical Journal. Des Moines.

88. Journal d'Accouchements. Liege.
89. Journal of the American Medical Association. Chicago.
90. Journal de Medicine de Paris.
91. Journal of Nervous and Mental Diseases. New York.
92. Journal of Obstetrics and Gynecology of the British Empire. London.
93. Journal des Sages-Femmes. Bordeaux.
94. Kansas City Medical Index-Lancet.
95. Klinisch-Therapeutische Wochenschrift. Wien.
96. The Lancet. London.
97. Louisville Monthly Journal of Medicine and Surgery.
98. Lyon Medical.
99. Maryland Medical Journal. Baltimore.
100. Medical Age. Detroit.
101. Medical Bulletin. Philadelphia.
102. Medical Chronicle. Manchester.
103. Medical Examiner and Practitioner. New York.
104. Medical Fortnightly. St. Louis.
105. Medical Mirror. St. Louis.
106. Medical News. New York.
107. Medical Press and Circular. London.
108. Medical Record. New York.
109. Medical Review of Reviews. New York.
110. Medical Standard. Chicago.
111. Medical Summary. Philadelphia.
112. Medical Times. New York.
113. Medicine. Detroit.
114. Memphis Medical Monthly.
115. Milwaukee Medical Journal.
116. Mittheilungen aus den Grenzgebieten der Medicin und Chirurgie. Jena.
117. Monatsschrift für Geburtshilfe und Gynäkologie. Berlin.
118. Montreal Medical Journal.
119. Muenchener Medicinische Wochenschrift. Muenchen.
120. New Orleans Medical and Surgical Journal.
121. New York Medical Journal.
122. New York State Journal of Medicine. New York.
123. Northwestern Lancet. Minneapolis.
124. l'Obstetrique. Paris.
125. Occidental Medical Times. San Francisco.
126. Old Dominion Journal. Richmond.
127. Pacific Medical Journal. San Francisco.
128. Pennsylvania Medical Journal. Pittsburg.
129. Philadelphia Medical Journal.
130. Physician and Surgeon. Detroit and Ann Arbor.
131. Post-Graduate. New York.
132. Practitioner. London.
133. Prager Medicinische Wochenschrift.
134. Presse Medicale. Paris.
135. Proceedings of the New York Pathological Society. New York.
136. Proceedings of the Pathological Society of Philadelphia.

137. *Le Progres Medical.* Paris.
138. *Quarterly Medical Journal of Yorkshire and Adjoining Counties.*
139. *La Rassegna d'Ostetricia e Ginecologia.* Napoli.
140. *Revista de Medicina y Cirugia.* Barcelona.
141. *Revista Ibero-Americano de Ciencias Médicas.* Madrid.
142. *Revue de Chirurgie.* Paris.
143. *Revue Clinique d'Andrologie et de Gynecologie.* Paris.
144. *Revue de Gynecologie et de Chirurgie Abdominale.* Paris.
145. *Revue de Medecine.* Paris.
146. *Revue Mensuelle Gynecologie, Obstetrique et de Pædiatrie de Bordeaux.*
147. *Revue Pratique d'Obstetrique et de Gynecologie.* Paris.
148. *Revue Pratique Obstetrique et de Pædiatrie.* Paris.
149. *Riforma Medica.* Roma.
150. *Roussky Vratch.* Odessa.
151. *St. Louis Courier of Medicine.*
152. *St. Louis Medical Review.*
153. *St. Louis Medical and Surgical Journal.*
154. *St. Paul Medical Journal.*
155. *Scottish Medical and Surgical Journal.* Edinburgh.
156. *Semaine Gynecologie.* Paris.
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158. *El Siglo Médico.* Madrid.
159. *Southern Practitioner.* Nashville.
160. *Texas Medical Journal.* Austin.
161. *Therapeutic Gazette.* Detroit.
162. *Therapeutische Monatshefte.* Berlin.
163. *Therapie der Gegenwart.* Berlin.
164. *Toledo Medical and Surgical Reporter.*
165. *Transactions of the Obstetrical Society of London.* London.
166. *University of Pennsylvania Medical Bulletin.* Philadelphia.
167. *Vermont Medical Monthly.* Burlington.
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170. *Vratchebnaya Gazeta.* St. Petersburg.
171. *Washington Medical Annals.*
172. *Western Medical Review.* Lincoln, Neb.
173. *Western Medical and Surgical Gazette.* Denver.
174. *Wiener Klinische Rundschau.* Wien.
175. *Wiener Klinische Wochenschrift.* Wien.
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178. *Zeitschrift für Heilkunde.* Wien.
179. *Zeitschrift für Klinische Medicin.* Berlin.

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ABSTRACTS.

A. D. CHAFFEE, M.D., T. W. CLEVELAND, M.D., REUBEN CRONSON, M.D., GEORGE GELLHORN, M.D., AND ADAM SCHAUF, M.D.

OBSTETRICS.

Fistulae Cervico-Vaginales Laqueaticae.

NEUGEBAUER, of Warsaw, (*Centralbl. f. Gyn.*, No. 31, 1902). gives the following etiology: 1. Most commonly a longitudinal laceration of the cervix during abortion or labor, with subsequent union of the lower margins only. 2. Rupture of the cervix above the external os during abortion or labor, especially when the cervix is hard and rigid as in some elderly primiparas or syphilitics; complete separation of the lower segment of the cervix may occur in a similar manner. 3. Traumatic perforation with sharp instruments used for criminal abortion. 4. Necrosis from long-continued pressure of the fetal head. 5. Incomplete union following a trachelorrhaphy. 6. Rarely from specific ulceration, syphilitic, tubercular, diphtheritic or carcinomatous.

He describes two cases due to instrumental perforation occurring at induced abortion; a subsequent conception took place in each instance; abortion at the fifth month resulted in one case and in the other delivery at term through the opening made by dividing the tissues between the external os and the fistula.

He has collected from the literature, seven other cases, five resulting from spontaneous rupture during abortion or delivery at term and two from instrumental perforation following criminal abortion. Repair of these fistulas has been found very difficult in most instances.

Contributions to the Casuistry of Cervico-Vaginal Fistulae.

E. WORMSER (*Centralblatt für Gynäkologie*, 1902, Nr. 48) reports a case of fistula of the neck of the uterus (cervico-vaginal), this being the tenth reported in medical literature.

Patient 26 yrs.; first menses appeared at 14 yrs. and returned regularly 4-weekly. Soon after marriage she became pregnant. Quickening was felt at the proper time, but two weeks later she developed pains apparently without cause. A midwife, called three days after, pronounced the patient not in labor, but three hours later the fetus was born spontaneously, accompanied by severe pains. Puerperium normal.

Since this delivery has experienced severe backache, leucorrhœa, menses irregular from two to five weeks and profuse. Has been sterile. Examination disclosed a conical cervix turned forwards. The cervical canal is oval in shape without lacerations, permitting the passage of a small lead-pencil. About 1 cm. above in the posterior wall a defect is noticed, which widens in an upward and backward direction toward the posterior vaginal vault. The tear is three-cornered and the anterior cervical wall can be seen through it. The length of the tear is $2\frac{1}{2}$ cm., the widest part nearly 1 cm. A sound passed into the cervical canal can be seen through the tear. The internal os is about $\frac{1}{2}$ cm. above the upper end of the fistulous opening. Operation performed by Prof. Müller.

The edges of the fistula were prepared and the two rows of sutures united them. The mucous and submucous coats were united with continuous catgut and the vaginal mucous membrane was united with silk sutures also continuous. Two weeks later a secondary suturing was rendered necessary from failure of the first to unite, which seemed to be successful.

Three months later she had not become pregnant and claimed a third operation had been performed (removal of a small piece of the cervix).

There can be no doubt but that the os exterum of the cervix being rigid and the pains lasting for three days so stretched the post-cervical wall that it ruptured, and allowed the fetus to pass. This tear not healing produced a fistula which resulted in endometritis, irregular menses, whites, sterility.

The cause of the rigidity of the os exterum which failed to respond after almost four days of labor is unexplained.

Neugebauer gives as causes for the production of these fistulæ the following:

1. Ununited laceration of the lower part of the cervix.
 2. Incomplete healing of wound after Emmet's operation.
 3. Ulcerative processes (tuberculosis, syphilis, diphtheria, carcinoma, puerperal pressure and gangrene.
 4. Traumatism (abortive manœuvres).
 5. Congenital double cervix.
 6. Spontaneous laceration of the posterior cervical wall *sub partu*.
- Of these the last cause may answer for the above case. A. S.

Fistulæ Cervico-Vaginales Laqueaticæ.

E. DIRMOSER (*Centralblatt für Gynäkologie*, 1902, No. 48) reports a case of cervico-vaginal fistula resulting from a four months' abortion due probably to a laceration of the posterior cervical wall.

Patient 33 yrs. of age; married 5 yrs.; first menstruation appeared at 15 yrs. Has suffered from dysmenorrhea, migraine, and cervical catarrh. Has aborted twice, at four and five months, respectively. Suffered considerably with the first abortion before the fetus was discharged. No instruments were used upon either occasion. Patient desiring a family she sought medical aid. Examination revealed a virgin cervix, but at the posterior cervico-vaginal junction a granulative spot was discovered, filled with a mucous secretion in which a sound passed easily to the fundus of the uterus.

Patient refused an operation so that local treatment only could be given, which consisted of caustics, etc.

She became pregnant later and at the end of the seventh or beginning of the eighth month gave birth to a boy weighing $1\frac{1}{2}$ Kg. who lived. The child was born through the fistulous opening and not through the external os. Two months later the fistulous opening had returned to the same size it had been before pregnancy began.

A. S.

Spasmodic Contraction of the Cervix Causing Obstruction to Delivery.

S. DURLACHER (*Centralblatt für Gynäkologie*, 1902, No. 50) reports a case in which spasmodic contraction of the cervix occurring simultaneously with each uterine pain produced a decided obstruction to delivery. Patient 34 years of age, III-para.

First delivery occurred in 1899. Two months prior to delivery she experienced spasmodic pains which were followed by a show of blood. Labor lasted $2\frac{1}{2}$ days, being completed by forceps; owing to the spasmodic contractions two lateral incisions in the cervix were necessary. The fetus lived six hours. Puerperium normal. The second delivery occurred prematurely at 6 months. Fourteen days previously a slight hemorrhage occurred which gradually became more profuse.

Owing to attacks of syncope premature labor was induced. With each uterine pain the cervix became rigid and contracted while between the pains the cervix was soft and flaccid. Extraction followed. The third delivery occurred at term. The position was 11 occip. ant. After about two days of labor the cervix was found completely dilated

between the pains, while with each pain it would spasmodically contract and form an edematous ring.

Forceps were applied and careful traction made between the pains. Cocaine applied locally to the cervix had no apparent effect in reducing the contractions.

In about 20 minutes a living fetus was extracted.

After pains severe. Puerperium normal. Pelvic measurements showed a slight universally contracted pelvis.

The abnormal condition of the cervix was evidently the cause of dystocia and should not be confounded with simple rigidity of the os. In the latter, the rigidity remains constant while in the former the rigidity occurs only during uterine contraction. As the uterine muscles contract and draw themselves upward the os cervix contracting at the same time and pressing against the fetal head, it seems very probable that a severe contraction may produce a separation of the lower uterine segment. The cause of this abnormal condition of the cervix is possibly an abnormal development of the cervical sphincter muscles.

In the treatment general antispasmodics are of no avail. Local mechanical measures seem to answer.

A. S.

Argentum Aceticum as a Prophylactic in Ophthalmoblenorrhoea.

E. SCIPLADES (*Sammlung klinischer Vorträge*, 1902, No. 345) says that a 1-per-cent. solution of arg. aceticum is just as effective as the 2-per-cent. solution of arg. nitricum of Credé for the prevention of ophthalmia neonatorum.

Besides, it has the advantage over the latter that at ordinary room temperature a stronger solution than 1 per cent. cannot be produced, nor does its strength increase by evaporation, therefore its solution cannot act as a caustic, and is safe in the hands of the laity.

The number of cases is materially reduced in which reaction occurs after the use of 1-per-cent. sol. of Arg. aceticum, when its use is not followed by instillation of salt solution, since the latter unfavorably influences its action.

The use of a 1-per-cent. sol. of Arg. aceticum never produces such an intense reaction that it cannot at first glance be easily distinguished from the inflammation accompanying ophthalmoblenorrhoea. These are the recommendations offered for the use of a 1-per-cent. sol. of Arg. aceticum without the paralyzation by means of salt solution as a prophylactic in ophthalmia neonatorum.

A. S.

Foreign Bodies in the Uterus.

E. TOFF of Bucarest (*Muenchen. Medic. Wochenschr.*, Sept. 23, 1902) reports the following rare case. The patient, 31 years of age, had an incomplete abortion in the third month of her fourth pregnancy, one year ago. On account of retention of the placenta and of copious hemorrhages, she was curetted, and the uterus was packed with several iodoform gauze tampons which were removed the following day. Since her dismissal from the hospital, the patient had suffered more or less intense pain in the lower abdomen and back with exacerbations during menstruation, the latter occurring quite regularly. In the intermenstrual periods she complained of a copious vaginal discharge which did not yield to any sort of local treatment. Fever was not noted at any time.

Toff saw the patient for the first time, one year after the curettement. Examination revealed the uterus in anteversion, hard, enlarged and sensitive to the touch; the vaginal portion was considerably hypertrophied and inflamed, and a thick mucus of grayish-green color was flowing from the external os. After dilatation with laminaria tents, Toff succeeded in extracting from the uterine cavity a firmly compressed and decomposed strip of gauze, 30 cm. long and about 3 cm. wide. Perfect recovery ensued.

The nature of the foreign body and the length of time during which it was harbored in the uterus without lasting ill effects render this case particularly interesting. In a second case, the author extracted from the uterus a sharply pointed chip of a peculiar sort of wood which, in Roumania, is frequently used for producing criminal abortion.

GARNECKI (*Deutsche Medic. Wochenschr.*, 1901, No. 23) reports a singular case in which a foreign body obstructed parturition. He was called to attend a labor case. On his arrival at the house, the husband of the patient told him that a "tin-box" would have to be removed from the genital tract before the baby could be born. An examination showed: Woman of 27 years, well developed, pelvis normal, os uteri dilated to the size of a fifty-cent piece, head presentation, child alive, membranes ruptured, uterine contractions satisfactory. Between the head of the child and the os uteri lay a foreign body, the supposed tin-box. On account of this obstruction the head was not able to dilate the os completely and a spontaneous termination of parturition seemed under these conditions impossible. Therefore, removal of the foreign body from the uterine cavity was decided upon. The box was turned until the lid came into view. The lid was then taken off and re-

moved. It was now possible to grip the body of the box with forceps and to extract it by careful rotary movements. The box was cylindrical, had a diameter of 10 cm. and was 4 cm. high. The labor was finally ended by means of forceps, after two dense fibrous scars in the margin of the os uteri had been incised. The child was alive and fully developed. Puerperium was normal.

On inquiry, the patient gave the following remarkable explanation for the introduction of this box: When 12 years old, her menstruation appeared for the first time. In order to prevent a subsequent hemorrhage she introduced this box, in which she kept pens, into her vagina. Nevertheless, menstruation was always regular. Later she tried to remove the box, but did not succeed. She never consulted a physician and never experienced any inconvenience. She married at twenty-five. Coition was never interfered with and the husband was unaware of the existence of the box up to this confinement. When married five months, she had a miscarriage in the fourth month of pregnancy. Up to this time she always had felt the box in her vagina, but after the abortion, to her surprise, it had disappeared. She was not able to explain the fact to herself, but was certain that the box had not fallen out. Thus it is beyond doubt that the box subsequent to the abortion slipped into the uterine cavity. It had been in the vagina thirteen and in the uterus one and one-half years without producing any noteworthy disturbance.

G. G.

AMERICAN GYNECOLOGY

VOL. II.

APRIL, 1903.

No. 4

A STUDY OF THE DEGENERATIONS AND COMPLICATIONS OF FIBROID TUMORS OF THE UTERUS FROM THE STANDPOINT OF THE TREATMENT OF THESE GROWTHS.

BY CHARLES P. NOBLE, M.D.,

Surgeon-in-Chief, Kensington Hospital for Women, Philadelphia.

It is my purpose to present to you a study of the degenerations and complications of fibroid tumors of the uterus as met with in my own practice, together with the results of similar investigations at the hands of several other gynecologists in a large series of cases, in order that a fairly correct appreciation of the real nature of the dangers to which women having fibroid tumors are subjected may be arrived at; and to present for your discussion the conclusions which I have reached as a result of these studies.

The classical teachings concerning fibroid tumors of the uterus still influence a large proportion of the profession, and even gynecologists are influenced by these teachings, at least in their written and spoken discussions upon this subject. My own experience in dealing with fibroid tumors was still small when it became evident to me that the classical teachings concerning the life history of these growths, their degenerations, complications and dangers, were far from correct; and hence the necessity for a careful study of the whole question became apparent, in order that these growths could be dealt with from a scientific instead of from a traditional basis.

Atlee, the great pioneer in the curative treatment of fibroid tumors, detailed in his Prize Essay¹ many of the dangers arising from fibroid tumors, and his work was a strong argument against the classical teachings.

Martin⁷ was probably the first to tabulate and analyze the degenerations and complications met with in a considerable number of cases, and to point out that the inherent risks of fibroid tumors of the uterus were much greater than was generally believed.*

Fatty degeneration of tumor.....	7
Calcification of tumor.....	3
Suppuration of tumor.....	10
Edema of tumor.....	11
Cystic degeneration of tumor.....	8
Teleangiectasis of tumor.....	3
Sarcoma of tumor.....	6
Carcinoma of cervix uteri.....	2
Carcinoma of corpus uteri.....	7
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In June, 1901, I read before the British Gynecological Society a paper entitled "The Complications and Degenerations of Fibroid Tumors of the Uterus as Bearing upon the Treatment of These Growths," which consisted of a study of the complications and degenerations met with in operating upon 218 patients the subjects of fibromyomata of the uterus. Since that time 40 patients have been operated upon, making a total of 258 cases in my own experience as a basis for analysis (March 23, 1903). The following complications were encountered:

Appendicitis	9
Bilateral hydrosalpinx	10
Unilateral hydrosalpinx	7
Hematosalpinx	1
Calcareous infiltration	5
Cystic degeneration of ovaries.....	2
Ovarian cyst with twisted pedicle.....	1
Ovarian cyst, bilateral.....	2
Ovarian cyst, unilateral.....	22
Ovarian cyst, suppurating.....	1
Bilateral dermoid cyst; umbilical hernia.....	1
Dermoid cyst, suppurating; sinus through abdominal wall.....	1
Dermoid cyst with twisted pedicle.....	1
Dermoid cyst	1
Intraligamentous development of fibroid.....	18
Retroversion of uterus.....	4
Procidentia of uterus.....	4
Parovarian cyst	2
Ectopic pregnancy	3
Papillary carcinoma of both ovaries.....	1
Abscess of ovary.....	1

*Complications of fibroid tumors met with in 205 cases by A. Martin.

Pyosalpinx, bilateral	7
Pyosalpinx, unilateral	4
Salpingitis, bilateral	2
Salpingitis, unilateral	8
Myxomatous degeneration of tumor.....	8
Cystic degeneration of tumor.....	6
Necrosis of tumor.....	17
Twisted pedicle, pedunculated tumor.....	2
Epitheliomatous infiltration of fibroid tumor.....	1
Adenocarcinoma of body of the uterus.....	4
Epithelioma of cervix uteri.....	4
Sarcoma	2
Syncytioma	1
	163

In estimating the risks encountered by patients suffering from fibroid tumors, there will be considered first those growing out of the complications themselves, which will be classified in three groups: *First*, those which would lead to a fatal result; *second*, those which would threaten the life of the patient; and, *third*, those which would involve more or less invalidism. The intrinsic risks of the uncomplicated tumors will be considered later.

1. Of complications which would lead to the death of the patient there were the following:

Ovarian cyst, with twisted pedicle.....	1
Ovarian cyst, bilateral.....	2
Ovarian cyst, unilateral.....	22
Ovarian cyst suppurating.....	1
Bilateral dermoid cyst; umbilical hernia.....	1
Dermoid cyst suppurating; sinus through abdominal wall.....	1
Dermoid cyst with twisted pedicle.....	1
Dermoid cyst	1
Ectopic pregnancy	3
Papillary carcinoma of both ovaries.....	1
Abscess of ovary.....	1
Pyosalpinx, bilateral	7
Pyosalpinx, unilateral	4
Cystic degeneration of tumor.....	6
Necrosis of tumor.....	17
Twisted pedicle, pedunculated tumor.....	2
Epitheliomatous infiltration of the fibroid tumor.....	1
Adenocarcinoma of body of the uterus.....	4
Epithelioma of cervix uteri.....	4
Sarcoma	2
Syncytioma	1
To these must be added three cases of cancer of the cervix compli-	

cating fibroids, in which hysterectomy was not performed, reported in 1897 ¹⁰	3
Also one case of epithelioma of the cervix complicating a fibroid tumor of the uterus, seen in consultation with Dr. W. Wayne Babcock in 1899, in which the patient's general condition forbade operation. Also a fifth case from my hospital service, reported by Dr. Babcock ³ in 1898. This is Case 2 of Dr. Babcock's report, in which a fibroid tumor of the uterus was complicated by epithelioma of the cervix, making altogether 14 cases of cancer complicating fibroid tumor which have been encountered.....	2
Total.....	<u>88</u>

Of the fatal degenerations and complications 42 were of the uterus or tumor (16 per cent.), and 48 were of the appendages (18 per cent.)—a total of 34 per cent.

2. Of complications threatening the life of the patient were the following:

Appendicitis	9
Bilateral hydrosalpinx	10
Unilateral hydrosalpinx	7
Hematosalpinx	1
Parovarian cyst	2
Myxomatous degeneration of the tumor.....	8
Total.....	<u>37</u>

3. Of conditions leading to more or less permanent invalidism of the patient were the following:

Calcareous infiltration	5
Cystic degeneration of ovaries.....	2
Intraligamentous development of fibroid.....	18
Retroversion of uterus.....	4
Procidentia of uterus.....	4
Salpingitis, bilateral	2
Salpingitis, unilateral	8
Total.....	<u>43</u>

It is probably a moderate estimate that 95 of these patients, or 36 per cent., would have died of the complications of the fibroid tumors had they not been operated upon.

It is difficult to estimate the number of deaths which would have resulted from the symptoms produced by the tumors tabulated as uncomplicated—deaths due to hemorrhage; to chronic anemia leading to degeneration of the heart and kidneys; to pressure of the tumor upon the ureters and bowels; to malnutrition induced by the hemorrhages

and by the increase of intra-abdominal pressure interfering with the functions of the alimentary canal; to the lowered vitality of the patients, increasing their liability to contract intercurrent diseases; to septicemia from necrosis of the tumors; and to thrombosis and embolism through associated phlebitis, and to subsequent degeneration in the tumors tabulated as uncomplicated. To these must be added the risks of pregnancy and parturition when complicated by fibroid tumor. It can hardly be considered as other than moderate if we estimate that 15 of these patients would have died eventually as a result of the presence of the tumors, independent of the above complications. This would make a total of 110 deaths in the 258 cases as a result of the tumors themselves or their complications—a mortality of 46 per cent.

In estimating the number of deaths which would occur from the various complications encountered, there may be a difference of opinion as to the probable history of the special complications. It should be pointed out, however, that this would merely take away a small number from the list of deaths to add it to the list of invalids.*

The publication of my paper (already referred to) has stimulated the publication of somewhat similar papers by Dr. Charles J. Cullingworth, of London, and Dr. Carlton C. Frederick, of Buffalo. Dr. Cullingworth⁴ presents a notable addition to our knowledge of the life-history of uterine fibromyomata, particularly with regard to the occurrence of complications and degenerations which render operative interference imperative.

The cases reported cover a period from 1892 to 1901 inclusive, and comprise 89 abdominal hysterectomies, 9 abdominal myomectomies, 1 Cesarean section, and 1 exploratory section, in the two latter the specimens having been obtained at autopsy.

Of these hundred specimens, 46 were found to be typical fibromyomata uteri, with no structural change apparent to the naked eye; 2 showed telangiectatic change, with non-encapsulation and abnormal diffusion through the muscle; and 52 presented pathological degenerations.

These latter 52 cases were classed under the heading of:

Edematous and myxomatous degeneration.....	27
Myxo-sarcomatous	1
Cystic or fibro-cystic.....	5

*A considerable number of complications and degenerations in the series of cases above reported undoubtedly have been omitted, owing to the failure to record the particular degenerations present in tumors which have been removed. This is especially true of cases of myxomatous degeneration of the tumor, of which there have been a much larger number encountered than the eight tabulated.

Calcareous	1
Necrotic	18
	<hr/>
Total.....	52

The term edematous in the first heading is retained in deference to established custom in nomenclature, although it is probable that myxomatous more nearly describes the condition of softening and exudation of yellowish fluid, which is found upon section of these tumors.

The subdivision of the necrotic tumors into those in which the component mass of connective tissue has lost its vitality, but is not capable of infecting (necrobiotic), and those in which the dead tissue contains infective bacteria, is a rational one.

In considering the complications which are encountered during the life of a fibroid tumor, Dr. Cullingworth includes only those which may be supposed to be directly caused by the presence and growth of the tumor. He has not seen a single case of salpingitis as a complication of uterine fibromyoma, and believes that when it does occur, it is a mere coincidence, but admits that it might be observed in connection with septic degeneration of the tumor, as a result of infection. Five cases of hydrosalpinx, however, are reported as complications. Serious peritonitic adhesions occurred in 12 cases, ureteral pressure symptoms in 2 cases, and 2 cases of twisted pedicle were observed.

Pain as a predominant symptom is thought to be an indication of the presence of some degenerative process, it having been noted in two-thirds of the necrotic cases, in three-fifths of the cystic cases, and in one-third of the myxomatous cases.

The age of the youngest patient operated upon was twenty-three years, the oldest sixty-one years, and the preponderance of cases occurred between the ages of thirty-five and forty-five years.

Two of the cases were notable as showing a marked increase in size of the tumor, after the onset of the menopause, with the initiation of necrotic change at that period. The operation resulted fatally in both these cases.

Dr. Cullingworth declines to formulate any conclusions from the facts set forth in his paper, wishing to avoid the impression of having arranged his facts to support a preconceived opinion.

The strict limitations under which Dr. Cullingworth compiled his table of 100 cases has greatly lessened the apparent risks of patients suffering from fibroid tumors, as compared with the method adopted by myself. However, of the 100 cases, certainly 24 would have died as a result of changes in the tumors themselves. Of the 27 cases of edematous tumor and tumors undergoing myxomatous degeneration, there is

no doubt that a considerable percentage would have died either from the development of fibro-cysts or from necrosis.

Again, all cases of sloughing intrauterine fibroids, and all fibroid polyps were excluded on the ground that no one disputes the necessity for removing such tumors by operation.

Again, most of the complications met with in the women having these fibroid tumors were excluded from the table on the ground that they were independent of the tumors themselves. As complications there were tabulated:

Serious peritonitic adhesions.....	12
Hydrosalpinx	5
Dilated ureters and hydronephrosis.....	1
Dilated ureters, hydronephrosis, suppurative pyelitis in both kidneys, with two phosphatic calculi and numerous abscesses in right kidney	1
Ectopic gestation	1
Twisted pedicle	2

If the excluded cases of fibroid tumor, especially of sloughing sub-mucous fibroids and fibroid polyps, and the cases in which such serious complications as ovarian cysts were encountered, were added to Dr. Cullingworth's table, it would appear that the presumptive mortality without operation in the cases coming under his observation would have been equally as great, if not greater than in my own experience.

Dr. Frederick⁵ has reported a series of 125 cases of uterine fibroids, being the total number operated upon by him at the time of his report. The classification followed is quite similar to my own. The following complications were observed:

Sarcoma	2
Epithelioma of cervix.....	2
Carcinoma of endometrium and body	6
Cystic degeneration of fibroid.....	5
Abscess of fibroid.....	1
Necrosis of tumor.....	5
Hematoma of tumor.....	1
Abscess of ovary, single.....	5
Abscess of ovary, double.....	2
Tubo-ovarian abscess	1
Pyosalpinx, single	5
Pyosalpinx, double	1
Salpingitis	8
Hydrosalpinx, single	10
Hydrosalpinx, double	5
Hematosalpinx (possible ectopic gestation).....	1
Ventral hernia	1

Umbilical hernia	3
Parovarian cyst	3
Dermoid cyst	1
Cystic ovaries, unilateral.....	15
Cystic ovaries, bilateral	3
Fibroid of ovary.....	1
Hematoma of ovary.....	1
Appendicitis	3
Carcinoma of umbilicus.....	1
Twisted pedicle, ovarian cyst.....	1
Twisted pedicle, pedunculated fibroid.....	1
Tuberculous peritonitis	1
Intraligamentous development of fibroid.....	8
Subcystic development of fibroid.....	2
Universal adhesions	4

Of which the following were probably the fatal complications:

Fibroid of ovary.....	1
Sarcoma	2
Epithelioma of cervix.....	2
Adenocarcinoma of body.....	6
Abscess of tumor.....	1
Hematoma of tumor.....	1
Abscess of ovary.....	7
Pyosalpinx	6
Tubo-ovarian abscess	1
Necrosis of tumor.....	5
Tuberculous peritonitis	1
Twisted pedicle, ovarian.....	1
Twisted pedicle, fibroid.....	1
Cystic degeneration of fibroid.....	5
Ovarian cysts, large.....	10
Carcinoma of umbilicus.....	1

—
51

Of these 23 were of the tumor or uterus, 26 of the appendages, and 2 did not involve the pelvic organs.

Following are those complications which might cause death or tend to continued invalidism:

Salpingitis and adhesions.....	8
Hydrosalpinx	10
Parovarian cyst	3
Procidentia uteri	3
Hematosalpinx	1
Hematoma of ovary	1
Ventral hernia	1
Umbilical hernia	1

Universal adhesions	3
Intraligamentous development of fibroid.....	8
Subcystic development of fibroid.....	2
Small cystic ovary.....	8
Appendicitis	3
	<hr/> 52

Of the 51 complications tabulated as probably fatal, 40 certainly would have been fatal, the only possible exception being the ten cases of ovarian cysts. If one-half of these may be considered as probably fatal, there are 45 cases of positive fatalities. As to the 52 last tabulated, it may safely be estimated that the conditions in at least 10 per cent. might have become fatal by later developments. Hence an estimate of probably 50 fatalities from complications alone may be made. There must also be taken into account the remote systemic effects of these tumors, which later might have led to fatal organic lesions. It is well known that in time the anemias produced by 51 bleeding fibroids in this group would have worked sad havoc. How many of these patients would have developed degenerations of the vascular system, of the kidneys and nervous system? How many would have died of intercurrent diseases invited by their low vitality and poor resistance to infections? Add the results of pressure upon the various portions of the alimentary tract and the malnutrition resulting, increased intra-abdominal pressure and its consequent renal lesions, phlebitis and fibromyitis and the resulting thrombosis and possible embolism, and lastly the risks of possible pregnancy, and we have the conditions which may safely be estimated to affect at least 10 per cent. of all patients carrying uterine fibroids. The estimated total number of possible deaths, therefore, from all complications may be placed conservatively at from 55 to 60, or about 45 per cent.

In the table of complications of fibroid tumors published by A. Martin (already referred to), of the 205 cases, 33 would certainly have died without operation, because of the nature of the degenerative changes present in the tumor or in the uterus. In this series of cases none of the complications met with in the uterine appendages or outside of the uterus are tabulated.

It will be seen from an analysis of the 688 cases of fibromyomata of the uterus in the hands of four surgeons, that the presumptive mortality without operation from the degenerations and complications of the tumors and changes taking place in the uterus itself varied as follows:

Martin	16 per cent.
Noble	16 " "
Frederick	23 " "
Cullingworth	24 " "

If the complications met with outside of the uterus be included, the presumptive mortality furnished by Frederick is 45 per cent. and by myself 46 per cent.; and it is plainly evident, upon the same basis of classification, the presumptive mortality in Cullingworth's series would have been as great or greater.*

If the several series of cases of fibroid tumor of the uterus presented in this paper can be taken as representative, it is a fair conclusion that death will result in more than one-third of the cases if not submitted to operation. In more than one-fourth of the cases the result will be chronic invalidism. In my own experience, of the remainder, but few have not been incommoded to a considerable degree as a result of the presence of the tumors. Small multinodular subperitoneal fibroids in women forty years of age or more are the least apt to grow and to cause serious symptoms. Conversely, submucous and intramural fibroids in younger women are the most apt to develop and to cause serious trouble. The percentage of cases in which tumors have been found more or less accidentally is quite small. This estimate of the gravity of fibroid tumors is radically opposed to the classical teaching upon this point.

As bearing upon the advisability of early operation, the following paragraphs (revised to date) concerning the ages of the patients operated upon are taken from my former paper:

The disappearance of fibroid tumors after the menopause and after labor is a part of the classical teaching concerning the life history of these growths. My own experience adds little in support of this teaching. No instance of a fibroid tumor having disappeared after the menopause has come under my notice. In one case, seen fifteen years ago, a fibroid tumor was said to have greatly lessened in size after labor, as compared with its size before pregnancy. No other similar case has come under my observation since. That one having large opportunities for observation could have had this experience indicates that the disappearance of fibroid tumors as a result of the menopause or as a result of pregnancy is not to be expected. This occurrence is merely one of the curiosities in the history of these growths.

*The propriety of the classification adopted by Dr. Frederick and myself has been questioned, but it seems to me the only proper one, if it is desired to arrive at the expectancy of life of women suffering from fibroid tumors and the necessity for operation in such women as a class as they present themselves for treatment. In practice cases are not uncomplicated, and the classification is merely a tabulation of the actual findings in all the cases coming under observation; therefore it must be accepted as setting forth the real facts. Oftentimes the indication for operation has been stronger from the standpoint of the complication than from the standpoint of the fibroid tumor.

The ages of the patients operated upon, grouped in decennial periods, were as follows :

Under 20	1
Between 20 and 30.....	6
Between 30 and 40.....	94
Between 40 and 50.....	94
Between 50 and 60.....	21
Between 60 and 70.....	9

The remaining cases were operated upon *per vaginam*. In these cases the histories are not complete. One of them was between fifty and sixty, and a number between forty and fifty.

From the standpoint of the *youth* of the patient the following are of decided interest: one, 17 years of age; one, 22; one, 24; and one, 26. The history of the youngest patient is as follows: Miss T., aged 17, began to menstruate at 13. Menstruation was regular for five months. It then ceased for two years, with the exception of two periods. She then menstruated every two or three weeks, and from July, 1890, until December, 1890, when she consulted me, she had been bleeding constantly. The patient complained of extreme debility from loss of blood. Upon examination a fibroid tumor was found choking the pelvis and extending half way to the umbilicus. Operation March 23, 1891.

From the standpoint of the *advanced age* of the patient it is of great interest that 21 patients, including one operated upon *per vaginam*, were between fifty and sixty years of age, and that nine patients were between sixty and seventy years of age. The oldest patient was aged sixty-seven. It will be observed that 12 per cent. of the patients were above fifty years of age when their symptoms caused them to seek relief in operation, at which time, according to the classical teaching concerning the life history of fibroid tumors, most of the patients should have regained their health as the result of the influence of the menopause. The teaching that the menopause insures the symptomatic cure of the patient does not receive much support from these figures.

A striking illustration of the fact that the menopause need not bring relief to a patient suffering from a fibroid tumor is the case of Mrs. C., aged 67, the mother of one child, aged 40, who consulted me for the relief of intolerable bladder symptoms. She suffered constantly from tenesmus of the bladder, which had resisted long-continued treatment at the hands of others. She had suffered from hemorrhages from the uterus from the age of 35 until the menopause was established at 52. Examination showed a multinodular fibroid tumor, the pelvic portion of which had become calcareous. The subsequent investigation of the case

proved that the calcareous portion of the fibroid by pressure on the right ureter had caused degeneration of the right kidney. Operation was performed March 6, 1895, at the urgent request of the patient, in spite of a bad prognosis, in the hope that the removal of the tumor might afford an opportunity to relieve the bladder symptoms. She died four days later of suppression of urine.

In this connection, and as bearing upon the behavior of fibroid tumors after the menopause, reference will be made to the case of a physician's wife, seen in consultation some years ago, who had suffered from the age of 35 to 53 from uterine hemorrhages before the menopause was established. Subsequently her health improved, but she was never a vigorous woman. When about 70 years of age, after a drive on a rough country road, the tumor became necrotic. An abscess developed, which ruptured into the bowel. A drainage operation was performed by another surgeon, but the patient died septic.

As indicating the present status of the literature of the subject a number of quotations will be made. Kelly⁸ states: "The great majority of myomatous uteri require no treatment whatever; many of the smaller growths produce no symptoms, and their discovery is often purely accidental." "When it (the tumor) is not larger than a three or four months' pregnancy and produces no subjective symptoms no treatment of any kind is called for."

Montgomery⁸ states: "The mere discovery of the existence of a myoma must not be considered as a necessary indication for its removal, or even treatment. In this respect myomatous tumors differ from ovarian growths and from cancer, for the latter must be removed early, because their continued existence results in destructive influences upon the organism. The myoma must cause symptoms in order to indicate interposition."

Boldt⁸ states concerning treatment: "This may be divided into palliative and radical, or surgical and medical. Our aim should be to free the patient of existing pain and to remove any condition which jeopardizes life. A serious operation should never be undertaken just because a woman has a fibro-myomatous tumor; the growth must in some manner menace life or health and not be amenable to other treatment before this is permissible."

These quotations indicate, so far as the text books are concerned, that the classical teachings about fibromyomata of the uterus are still perpetuated; namely, that these tumors are benign in character, that usually they produce few or no symptoms, that their chief danger con-

sists in their tendency to produce hemorrhages, and that after the menopause they tend to shrink or to disappear.

These teachings are certainly contrary to the facts which have been presented to you, and it seems to me that they require sharp revision. The presumptive mortality without operation in patients having fibroid tumors, from the degenerations and complications of the tumors and changes which had taken place in the uterus itself when the patients came under observation, varied from 16 to 24 per cent. In both Frederick's table and my own the presumptive mortality from complications outside of the uterus was slightly greater than from those of the tumor and uterus. It is estimated by Frederick and myself, that at least an additional 10 per cent. of deaths will be added by the subsequent developments from the complicating conditions tabulated as non-fatal and the deaths from later accidents and degenerations in the tumors tabulated as uncomplicated fibroids.

It is a conservative statement that upwards of one-third of the women having fibroid tumors will die, if not subjected to operation. The contrast with the results which can be secured by operation is very striking. It probably will not be disputed that the mortality of myomectomy and hysterectomy is between 2 and 10 per cent., depending upon the gravity of the cases, upon the operator, and upon the environment in which the operations are done. It seems a fair conclusion that the resort to early operation will effect a saving of from 25 to 30 per cent. in mortality, in addition to the perhaps greater saving in the morbidity which follows operation, as compared with that which is incident to the history of fibroid tumors. Early operation in the case of young women having one fibroid or a few small fibroids affords the truest opportunity for conservatism, by curing these women of their disease and at the same time retaining their organs of reproduction. It seems to me that the attitude of the text books should be reversed, and that the rule of practice should be to remove all fibroids which come under observation, unless in a particular case there seems to be some good reason for temporizing, due either to the small size of the tumor, or to the advanced age, or to the general health, of the patient.

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COMPLETE NEPHRO-URETERECTOMY.*

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Definition.

By complete nephro-ureterectomy is meant the complete removal of the kidney and ureter at one attempt. The word "complete" is employed because a few operators have referred to nephrectomy with partial ureterectomy, and nephrectomy followed at a considerable interval of time with partial or complete ureterectomy, as being nephro-ureterectomy. As might be inferred, it is necessarily an unilateral operation, though it does not prohibit conservative surgery of the fellow organs. Yet in patients suffering from even slight impairment of the urinary function after removal of one kidney, it is considered a very dangerous predicament.

History of the Operation.

This, perhaps more than any other, is entitled to be called the *American* operation, inasmuch as the first four were performed by American surgeons. H. A. Kelly, so far as my thorough research shows, probably did the first complete nephro-ureterectomy, December 18, 1895. In the *Annals of Surgery*, 1897, xxvi, p. 364, McCosh of New York, reported a case which he had presented at the meeting of the New York Surgical Society, May 12, 1897. He said the operation was performed about eighteen months previously, which would be about November 12, 1895. He had performed this operation on a man for tubercular kidney and a large perinephrotic abscess. A private letter says this operation was done in January, 1896.

As is shown by the accompanying table, the two operations by LeDentu and Morris are the only ones that have been done outside of the United States. Ten American surgeons have done the other fifteen operations.

*Read before the Medical Society of the District of Columbia, March 25, 1903.

Primary nephro-ureterectomy complete. An incision was made in through the anterior vaginal wall to the ureter, which was loosened to its entrance into broad ligament and it was ligated next to bladder and severed. Then through a loin incision about five inches long, running from end of false ribs toward the right anterior superior spinous process, separated the kidney and the ureter to brim of pelvis where it broke on slight traction and pus escaped from upper end. Clamped vessels and severed and tied them, removing kidney and upper portion of ureter; then dissected the remainder of ureter from above. A few peritoneal openings were made and immediately sutured. Lower end opposite ureter slightly enlarged but practically normal. Right kidney slightly prolapsed; uterus and appendages normal. Gauze drainage above and below. After operation her temperature gradually declined to normal, which point was permanently reached on the 17th of November. The pulse came down to 72 to 80 and the respiration which had been notably rapid previous to operation came down to 22 to 24, where it remained. For the 24 hours preceding operation the amount of urine was 32 ounces, and was of a pale yellow color, containing a slight sediment, was acid in reaction, contained a slight trace of albumen and $4\frac{1}{2}$ grains of urea to the ounce. The usual microscopical examination revealed squamous epithelial cells and nothing else of note. On November 10, three days after operation, the quantity was 27 ounces. The quantity of urea had increased to 16 grains to the ounce, and it contained a slight trace of albumen and blood. The quantity of urine on the 11th was $24\frac{1}{2}$ ounces; on the 13th $21\frac{1}{2}$ ounces; on the 15th, 41 ounces, and on the 16th, 48 ounces. The urea was now but 7 grains to the ounce and in addition to blood the urine now contained a few pus cells. Tubercle bacilli were sought for by Dr. Carroll and not found. From this time until the 12th of January, 1903, when she left the hospital, the quantity of urine varied from 22 to 60 ounces per day, the variations being probably due to the usual influences in such cases, such as those of nervous origin, free purgation and variation in quantity of water ingested. On December 2 and 12, and January 4 and 7, and again the middle of this month, Dr. Carroll examined specimens of the urine catheterized specially to avoid the smegma bacillus, and reported his inability to find the tubercle bacillus. After operation the bladder was irrigated daily for a number of weeks, and then every alternate day, which irrigation is still being continued by the patient. The urine now contains no pus, no albumen and no evidence whatever of bladder abnormality.

There still remains, however, a considerable irritability of the blad-

TABLE OF RECORDED CASES OF COMPLETE NEPHRO-URETERECTOMY.

DATE.	OPERATOR.	SEX.	BACTERIOLOGICAL EXAMINATION OF URINE.	DIAGNOSIS.	ROUTE.	RESULT.	REPORTED.
December 18, 1895	Kelly, H. A.	F.	Tubercle bacilli found.	Tuberculosis of kidney and ureter.	Extraperitoneal.	Recovery.	<i>Johns Hopkins Hosp. Bull.</i> , 1895-7, p. 31-37
January, 1896	McCosh, A. J.	M.	No report.	Tubercular kidney and large perinephritic abscess.	Extraperitoneal.	Recovery.	<i>Ann. Surg.</i> , 1897, xxvi, p. 364.
1896	Kelly, H. A.	F.	Negative.	Renal tuberculosis.	Combined extraperitoneal and vaginal with short abdominal incision.	Recovery.	<i>Johns Hopkins Hosp. Bull.</i> , 1896-7, p. 31-7.
September 28, 1896	Baldwin, J. F.	F.	No report.	Tuberculosis of kidney and ureter and cystic ovaries.	Transperitoneal for ureter and extraperitoneal for kidney.	Died.	<i>Am. J. of Obst.</i> , 1900, xliii, p. 801.
September 21, 1897	Morris, H.	M.	No report.	Tuberculosis of kidney and ureter.	Extraperitoneal.	Recovery.	<i>Lancet</i> , 1898, i, p. 17.
February 8, 1898	MacMonagle, B.	F.	Tubercle bacilli found.	Tuberculosis of kidney and ureter.	Extraperitoneal.	do	<i>Tr. Am. Gyn. Soc.</i> , 1901, xxvi, p. 365.
October 19, 1898	Baldwin, J. F.	F.	No report.	Hydronephrosis and hydroureter.	Transperitoneal.	do	<i>Am. J. Obst.</i> , xliii, p. 801.
1899	LeDentu, M.	M.	do	Papillomatous tumor at vesical orifice of the ureter.	Extraperitoneal.	do	<i>Semaine Med.</i> , Mch. 1, 1899.
1899	Cathcart, R. S.	M.	do	Tuberculosis of kidney and ureter.	Transperitoneal.	do	<i>Tr. Tri-State Med. Asso. Carolinas and Va.</i> , 1900, p. 272.

1899	Ill, E. J.	F.	Tubercle bacilli found.	do	Extraperitoneal and vaginal.	do	<i>Tr. Med. Soc. N. Jersey</i> , 1899, p. 83.
1899	Pryor, W. R.	F.	do	do	Transperitoneal and vesical.	do	<i>Am. J. Obst.</i> , 1900, xli, p. 470.
1899	Noble, G. H.	F.	Negative.	do	Extraperitoneal and vaginal.	do	<i>Am. J. Obst.</i> , 1900, xli, p. 462.
1900	Montgomery, E. E.	F.	Negative.	Tuberculosis of kidney and ureter.	Extraperitoneal and vaginal.	Recovery	<i>Tr. Am. Gyn. Soc.</i> , 1900, xxv, p. 290.
June 8, 1900	MacMonagle, B.	F.	Tubercle bacilli found.	do	Extraperitoneal.	do	<i>Ibid.</i> , xxvi, p. 365; and private letter.
January 31, 1901	Baldwin, J. F.	F.	No report.	do	Transperitoneal.	Died.	<i>Am. J. Obst.</i> , 1900, xliii, p. 801; and private letter.
March 18, 1901	Bovée, J. Wesley	F.	Negative.	Calculus pyonephrosis and pyoureter.	Extraperitoneal.	Recovery.	<i>N. Y. Med. J.</i> , Jan. 25, 1902.
November 7, 1902	Bovée, J. Wesley	F.	Tubercle bacilli found.	Tuberculosis of kidney and ureter and ureter and bladder.	Extraperitoneal and vaginal.	do	Not reported.

TABLE OF RECORDED CASES OF COMPLETE NEPHRO-URETERECTOMY.

DATE.	OPERATOR.	SEX.	BACTERIOLOGICAL EXAMINATION OF URINE.	DIAGNOSIS.	ROUTE.	RESULT.	REPORTED.
December 18, 1895	Kelly, H. A.	F.	Tubercle bacilli found.	Tuberculosis of kidney and ureter.	Extraperitoneal.	Recovery.	<i>Johns Hopkins Hosp. Bull.</i> , 1896-7, p. 31-37.
January, 1896	McCosh, A. J.	M.	No report.	Tubercular kidney and large perinephritic abscess.	Extraperitoneal.	Recovery.	<i>Ann. Surg.</i> , 1897, xxvi, p. 364.
1896	Kelly, H. A.	F.	Negative.	Renal tuberculosis.	Combined extraperitoneal and vaginal with short abdominal incision.	Recovery.	<i>Johns Hopkins Hosp. Bull.</i> , 1896-7, p. 31-7.
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October 19, 1898	Baldwin, J. F.	F.	No report.	Hydronephrosis and hydroureter.	Transperitoneal.	do	<i>Am. J. Obst.</i> , xliii, p. 801.
1899	LeDentu, M.	M.	do	Papillomatous tumor at vesical orifice of the ureter.	Extraperitoneal.	do	<i>Semaine Med.</i> , Mch. 1, 1899.
1899	Cathcart, R. S.	M.	do	Tuberculosis of kidney and ureter.	Transperitoneal.	do	<i>Tr. Tri-State Med. Asso. Carolinas and Va.</i> , 1900, p. 272.

1899,	Ill, E. J.	F.	Tubercle bacilli found.	do	Extraperitoneal and vaginal.	do	<i>Tr. Med. Soc. N. Jersey</i> , 1899, p. 83.
1899	Pryor, W. R.	F.	do	do	Transperitoneal and vesical.	do	<i>Am. J. Obst.</i> , 1900, xli, p. 470.
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November 7, 1902	Bovée, J. Wesley	F.	Tubercle bacilli found.	Tuberculosis of kidney and ureter and ureter and bladder.	Extraperitoneal and vaginal.	do	Not reported.

TABLE OF RECORDED CASES OF COMPLETE NEPHRO-URETERECTOMY.

DATE.	OPERATOR.	SEX.	BACTERIOLOGICAL EXAMINATION OF URINE.	DIAGNOSIS.	ROUTE.	RESULT.	REPORTED.
December 18, 1893	Kelly, H. A.	F.	Tubercle bacilli found.	Tuberculosis of kidney and ureter.	Extraperitoneal.	Recovery.	<i>Johns Hopkins Hosp. Bull.</i> , 1896-7, p. 31-37
January, 1896	McCosh, A. J.	M.	No report.	Tubercular kidney and large perinephritic abscess.	Extraperitoneal.	Recovery.	<i>Ann. Surg.</i> , 1897, xxvi, p. 364.
1896	Kelly, H. A.	F.	Negative.	Renal tuberculosis.	Combined extraperitoneal and vaginal with short abdominal incision.	Recovery.	<i>Johns Hopkins Hosp. Bull.</i> , 1896-7, p. 31-7.
September 28, 1896	Baldwin, J. F.	F.	No report.	Tuberculosis of kidney and ureter and cystic ovaries.	Transperitoneal for ureter and extraperitoneal for kidney.	Died.	<i>Am. J. of Obst.</i> , 1900, xliii, p. 801.
September 21, 1897	Morris, H.	M.	No report.	Tuberculosis of kidney and ureter.	Extraperitoneal.	Recovery.	<i>Lancet</i> , 1898, i, p. 17.
February 8, 1898	MacMonagle, B.	F.	Tubercle bacilli found.	Tuberculosis of kidney and ureter.	Extraperitoneal.	do	<i>Tr. Am. Gyn. Soc.</i> , 1901, xxvi, p. 365.
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January, 1896	McCosh, A. J.	M.	No report.	Tubercular kidney and large perinephritic abscess.	Extraperitoneal.	Recovery.	<i>Ann. Surg.</i> , 1897, xxvi, p. 364.
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the attending physician. As the family was loath to get notoriety in the matter all further proceedings were dropped.

Case 2. Dr. X. called me to see a woman of 20 whom he had curetted after her first childbirth, two weeks previously, for puerperal fever. He felt the curette, as he thought, pass into the fallopian tube, but gave the matter no further thought, and irrigated the uterus as usual with corrosive sublimate solution. Little débris had been found in the uterus.



The illustration shows the anterior wall of the uterus split open. The arrow points to the perforation in the posterior uterine wall. A probe could be passed in a backward direction into the peritoneal cavity. A section from this "metro-peritoneal" fistula was carefully examined for me by Dr. S. W. Bandler, who reported that it was "lined with inflammatory granulation and necrotic tissue," thus proving that the injury had been produced during the life time of the patient.

Under antipyretics the temperature had kept down sufficiently to satisfy the doctor, but in spite of strychnia and heart stimulants the patient was going from bad to worse. Hence I was asked to see her.

I found the patient very much emaciated, with expressionless eyes and apathetic appearance. Although her temperature was only 100° F., her pulse was 140 and exceedingly small. The abdomen was not particularly sensitive but showed a curious alternating series of elevations and depressions. To the sense of touch some of these areas over the abdomen were hard, others soft. The vaginal examination excluded exudates or abscesses in that situation.

From the absence of vaginal tumefaction, from the rigidity of the

abdominal parieties, from the irregular aspect of the abdominal wall indicating peritonitis with adherent intestine at various points, from the clinical history, and, chiefly, from my disinclination to accept the doctor's statement that the curette had been passed into the fallopian tube, I diagnosticated accidental perforation of the uterus with subsequent general purulent peritonitis and advised immediate removal to the hospital for operation.

On the following morning she was in collapse with a temperature of 101° and pulse of 150. Under a few whiffs of chloroform the abdomen was rapidly opened and the whole peritoneal cavity was found to be divided into a large number of independent pockets of pus among the coils of intestine. One of my assistants estimated the amount of pus at about one gallon. The patient only survived the operation by five hours. The uterus removed post mortem showed a perforation in the posterior wall leading into the peritoneal cavity. (*See illustration.*)

Case 3. A young woman of 24 had been married four years, but had borne no children. One of the younger members of the profession undertook to overcome the sterility by subjecting her to a curettage. Although perfectly healthy before, she immediately became sick after the operation and was confined to bed with pelvic pain and fever for nearly three months. When I saw her, the vaginal examination revealed nothing, but, from the history and persistent fever, I diagnosticated an intrapelvic pus focus and decided on doing a laparotomy. The operation showed the suspicion of purulent tubes to be unfounded but an abscess was discovered between the anterior surface of the uterus and the bladder, which was entirely shut off from the general peritoneal cavity. This was opened and a cupful of pus escaped. It was not allowed to contaminate the peritoneal cavity by a wall of gauze-pads previously placed *in situ*. Thorough drainage was established but the patient is not making a satisfactory recovery and will require further operative intervention. I am satisfied that the uterus was perforated in the anterior wall during the curettage.

Case 4. I asked my house-surgeon, some years ago, to do a curettage for persistent bleeding in a woman after an early abortion. During the operation he felt the curette slip away to an unexpected depth. He completed his operation with a thorough intrauterine irrigation with corrosive sublimate. As the patient began to emerge from the anesthetic she was noticed to be very low and I was called up from the wards. I never have seen a picture of greater physical suffering in my life. With the thighs drawn up on the abdomen she emitted shriek after shriek of the most agonizing character. Although I should have liked to have

done something for her, as she was still on the operating table, I found her so absolutely pulseless that I did not dare to take the risk. She was ordered morphine and strychnine hypodermically with an ice-bag to the uterus in the hope that she might rally sufficiently to give us a chance to do something for her. Unfortunately she never emerged from her condition of profound shock and died a few hours later.

I will now briefly allude to some perforations, which I have done myself. In nineteen years I have accidentally perforated the uterus four times.

Case 5. In a woman, after labor, it occurred in my practice for the first time many years ago, while curetting the uterus for retained secundines. I recognized the nature of the accident immediately, stopped my operation at once, and omitted the usual intra-uterine irrigation. Morphine was given hypodermically, an ice-bag was applied over the hypogastrium, and, after several sleepless nights and a few days of untold misery on my part, the patient made an uneventful recovery. She has had several children since.

Case 6. I was curetting the uterus of a woman after a miscarriage for hemorrhages, when my instrument was felt to have entered to a depth beyond the uterine limits. Everything was stopped, no irrigation into the uterine interior was made, morphine and local refrigeration were resorted to, and my patient recovered after passing through a low grade of pelvic inflammation which confined her to bed for several weeks. She has since given birth to at least one child.

Case 7. I undertook to dilate and curette the uterus of a woman in order to assist her in becoming pregnant, as she had been sterile since her marriage. The curette perforated the uterus. The same plan was followed as narrated above and the patient never showed the slightest reaction. She developed, however, a backache which she had never complained of before, and I never tried to explain its origin to her. After a year she has not been pregnant, although the pain in the back has entirely disappeared.

Case 8. A woman came to me with an extensive laceration of the perineum. It had been repaired a number of times, but with each successive confinement it was torn afresh and perhaps deeper. She was willing to have it repaired again, provided I would guarantee her that she would bear no more children. As she had given birth to ten I felt that she was reasonable in her request and promised to do a double salpingectomy in addition to the perineorrhaphy.

In the course of the preliminary curettage my curette suddenly slipped through the posterior uterine wall, although very little pressure

was employed. I demonstrated to my assistants and medical friends in the operating-room that I had accidentally perforated the uterus by introducing a sound to its entire length into the cavity of a uterus which was otherwise not enlarged.

Without recourse to irrigation I delivered the fundus uteri through an anterior vaginal incision, exposed the puncture on the posterior uterine surface so that all could see it, and then proceeded to repair it with a few catgut sutures. The operation, as originally projected, was then done. This patient had no reaction and, after several years, has remained perfectly satisfied because the perineum is intact and she has never since become pregnant.

PUBLISHED CASES.

A rapid survey into the literature of the subject permits me to subjoin the following brief abstracts bearing on this interesting study.

Beuttner says that everybody has met cases during curettage in which the uterus becomes stretched and gives the impression of having been perforated. After describing two cases in which instruments suddenly passed, in the fairly normal uterus, to depths of 13 to 20 cm. he concludes that the uterus was not perforated but behaved "peculiarly" (*Eigenthümliches Verhalten des Uterus beim Einführen von Instrumenten.*)

Döderlein (Ahlfeld) made clinical observations and experimental studies proving that under certain circumstances intrauterine injections could be proved to enter the peritoneal cavity. Doléris refers to cases of pseudo-perforation of the uterus (Courant).

Ahlfeld is satisfied that on four or five occasions he was able to pass sounds in the living subject through the fallopian tubes into the peritoneal cavity.

According to Kossmann, Biedert has proved by experiments on the cadaver that the sound can be passed into the tube. Beuttner, in doing a vaginal operation for retroflexion is convinced that the Orthman sound passed some distance into the fallopian tube without perforating the uterus. Bischoff and Lehmann (Kossmann) have shown a wide os at the uterine extremity of the tube in cases in which the sound passed 17 and 28 cm. Gönners (Kossmann) passed the curette in a uterus only 6 cm. deep to a distance of 13 or 14 cm. He then did a colpotomy and examined the uterus carefully but found no evidence of injury. Playfair (Tait) thinks that many supposed perforations are really due to a misinterpretation of the passage of the instrument into the Fallopian

tube. Kossmann is satisfied that the non-puerperal as well as the puerperal uterus may undergo a sudden paralysis of the muscular coat and become converted into a relaxed bag which may be very much elongated or stretched during the passage of instruments.

On the other hand there is a preponderance of reported cases of uteri actually perforated in the course of examination or operations.

As long ago as 1872, Tait published three cases of "metro-peritoneal" fistulas. He had, in the course of an ovariectomy and a hysterectomy, seen two cases of perforation due to the sound. He adds a case in which he perforated the uterus in the course of a curettage and was able, nine months later, when he removed the same uterus, to recognize the injury which had produced a metro-peritoneal fistula. He never saw a fallopian tube with abnormally large uterine opening and was never able to sound the tubes through the uterus on the cadaver.

In 1890, Haynes published two cases of perforation of the uterus by the curette with recovery in each case.

While dilating the uterus with Hegar's dilating stems, Wertheim perforated a carcinomatous uterus. Fourteen days later, when the uterus was removed, a funnel-shaped cicatricial dent was seen, indicating that the perforation was in the process of healing.

Odebrecht, after referring to a case of Alberti in which a uterus of very soft consistency was met, refers to a case of his own which was perforated by the Orthman's sound while raising the uterus preliminary to doing a ventrofixation.

Courant quotes Pozzi as believing that punctures of the uterus are of frequent occurrence, but that the lack of danger associated with these accidents is accounted for by the antiseptic surroundings usually present in the cases. Courant did a laparotomy twenty-four hours after sounding and curetting the non-pregnant uterus, during which the uterine wall was punctured. He found on the posterior uterine surface a lacerated wound with adherent edges and, in the cul-de-sac of Douglas, a half ounce of blood.

Flandrin reports two cases of perforation of the uterus caused by the intra-uterine catheter in the course of irrigation. The prognosis in these cases he regards as unfavorable.

While passing the sound preliminary to a curettage, in a woman three months after confinement, Glaeser felt it slip in suddenly to the handle. After repeating this several times and concluding that the uterus had been perforated he became very much alarmed and at once did a vaginal hysterectomy. The uterus was as soft as "goose-fat" and showed four punctures in continuity at the fundus. At certain points

the sound, of its own weight, perforated the uterus and next day it was still soft enough to permit the finger to push through.

Rosenfeld was about to do a vesicovaginal fixation when the sound suddenly slipped from 7 cm. to a depth of 15 cm. Next day he proceeded to curette when his instrument suddenly passed in to a depth of 16 cm. He delivered the uterus through an anterior vaginal incision, repaired the injury on the posterior uterine surface, and fixed the uterus to the bladder. The patient recovered.

v. Guerard reports the case of a woman who, thinking herself pregnant, was subjected to the passage of a bougie in order to induce labor. The bougie suddenly slipped from a depth of 8 cm. to that of 20 cm. The injury to the uterus was repaired in the course of a subsequent laparotomy, and the woman recovered.

Queisner passed a sound 10 cm. and then an intra-uterine irrigator two-thirds of its length into the uterine cavity. He recognized a perforation from the free hemorrhage, tamponed the uterine interior, applied ice externally, and gave opium. The woman recovered.

Kentman perforated the uterus and then did a hysterectomy. Portions of the uterus were "as soft as butter." This he attributes (with Reinecke) to extensive degeneration of muscular tissue and claims is due to errors in circulation from malposition.

Schwartz, while curetting after an abortion, had the sound and then the curette slip in to a depth of 16 or 18 cm. The tip of the instruments could be felt externally with the hand on the abdomen. The operation was interrupted, the uterine interior packed with gauze, and, after passing through an attack of circumscribed peritonitis, the patient went on to recovery.

Fleischmann reports a case of abortion in which the operator punctured the uterus with polyp-forceps and drew the intestines down to the vulva. Billroth did a laparotomy, and found a 3 cm. tear in the fundus uteri in which an empty coil of intestine was strangulated. The gut was drawn up, the uterine injury repaired, 24 cm. of small intestine and a portion of the large intestine were resected, and the patient recovered.

Alberti, three hours after the uterus had been perforated in the course of a curettage, did a laparotomy, drew back 17 cm. of gut out of the uterine cavity, closed the wound in the uterus and the patient recovered. This patient subsequently successfully went through two curettages.

Mann reports a case of perforation of the uterus during abortion with prolapse of the intestine in which he did a laparotomy, resected intestine, anastomosed the small intestine to the cecum with the Murphy

button, and the patient recovered. He knew of two other cases, one operated but with fatal result.

Boldt has published a very interesting case. A physician had curetted the day before and had removed some "lumps of fat" after tearing through a white membrane. Although suspecting a perforation the patient's condition was so good that he decided to temporize. After fifty hours there was a sudden onset of peritonitic symptoms. Celiotomy showed that the ileum was torn through and separated from the mesentery. The patient died of shock.

Le Roy Brown reported a case in which, during dilatation of the uterus preparatory to a curettage after abortion, the uterus was torn. He was called in and did an immediate laparotomy, sewing up the uterine rent. The patient made a good recovery.

Dr. P. W. Nathan has narrated to me an unpublished case in which he was called to a doctor's office and found a woman in collapse with intestine protruding into the vagina. She had evidently had a pregnancy interrupted with the above unfortunate result. She was transferred to the hospital, where she died. The doctor had told him that the patient had walked into his office in this condition.

Dr. G. W. Tischner sends me the report of an unpublished case in which a woman perforated the uterus with a darning needle while endeavoring to interrupt an early pregnancy. She recovered under rest and ice.

Dr. H. J. Boldt has met many cases of perforation of the uterus, four of which terminated fatally.

Dr. T. G. Thomas reported a fatal case in a doctor's wife some twenty years ago.

Dr. Simon Marx tells me he has met half a dozen cases in which the uterus was perforated in the course of operative intervention.

Rebreyand has written an excellent paper on surgical perforations of the uterus not due to the sound or curette as ordinarily used, but occurring in the course of operations for polypi, fibroid tumors, inversion of the uterus, etc. He has collected 15 cases, which are carefully tabulated, and of which 11 recovered and 4 died.

It may be of interest to note that of 66 cases, in which the uterus has been perforated, which I have been able to collect and which I do not pretend to claim as even all of the cases on record, there have been 17 deaths and 49 recoveries. It is more than likely that a very large number of cases, in which the patients recovered, has never been reported. Hence we cannot judge the mortality rate from these figures.

Although the possibility of a sound or curette being passed into a

fallopian tube cannot be denied, there can be no doubt that this is of exceedingly rare occurrence and that it is far better to assume that a perforation has taken place.

In view of the fact that perforations of the uterus may occur in the hands of the most experienced physicians, it is wrong to conceal these cases. In the first place the proper recognition of these accidents is essential—particularly as far as the younger members of the profession is concerned—so that the proper course of procedure shall be clear to everyone. Secondly, the fear of malpractice suits ought not to deter those able to contribute to the literature of this subject from publishing their cases because this can be the only method of establishing the correct principles of treatment. More than this, it can be demonstrated that perforation of the uterus under certain circumstances is really unavoidable and hence cannot subject the properly trained and careful practitioner to criminal or other legal proceedings.

What, then, is the proper course to pursue, as far as our present knowledge and experience goes, in the management of accidental perforations of the uterus?

1. The first set of cases are those in which during the passage of a sound or curette, the uterus is perforated. The accident is recognized from the fact that the instrument passes to a depth beyond that of the size of the uterus previously mapped out by bimanual examination. The suspicion that the instrument has passed into a fallopian tube may justifiably arise, but in the present state of our knowledge, cannot be safely assumed. It is far safer to accept a possible injury to the uterus because this actually does occur in the large majority of the cases. Under these circumstances the prognosis is good, provided that the instrument, operator and field of operation have been aseptic. These cases will usually get well if manipulations within the uterine interior are brought to a sudden termination, and, particularly, if no intra-uterine irrigations are made. If the curettage or sounding was preliminary to an intra-peritoneal operation this may be proceeded with and the injury to the uterus repaired with several catgut sutures. No drainage is necessary. If no intraperitoneal operation was originally projected the patient ordinarily can be safely put to bed with an ice-bag over the hypogastrium and given morphine or opiates.

2. If the uterus has been injured and the operator has irrigated the uterine interior, three sets of conditions may arise. In the first set a mild local peritonitis may call for nothing more than the same line of treatment. In the second set an acute septic peritonitis may call for an immediate hysterectomy (usually vaginal) with drainage *per vaginam*.

The third set of cases may be less virulent and more chronic. They are apt to terminate in localized abscesses which may be located in the pelvic connective tissue or in the pelvic peritoneum. According to their seat they may require being attacked from above or below. Only very rarely will it be indicated in such cases to do a hysterectomy. The operation in most of these cases will be in the nature of an exploratory laparotomy and the exact line of work can only be determined on with the abdominal cavity opened.

3. In those cases in which the uterus has been injured and intestine has been dragged through the wound and become strangulated, laparotomy must be done as early as possible. If the strangulation has been fatal to the vitality of the gut this must be exsected. The uterus may then, according to the judgment of the operator, be repaired or removed. That even this state of affairs is not necessarily fatal, can be inferred from the studies of Miquel, who reports five recoveries in eight operations.

Lastly, although I recognize that the sounding or curetting of the uterus belongs to the domain of the general practitioner, I cannot insist too much that these proceedings should not be undertaken too lightly. I belong to the ranks of those who are convinced that the sound and curette are employed far too often. I believe that hysterometry and curettage should be resorted to far less frequently than is at present the case. Personally, I have very little use for the uterine sound and limit my indications very strictly for the use of the curette.

But, given the proper case and the proper man to handle it, these procedures will always be justifiable; and, if the unfortunate accident or perforation of the uterus does occur, I hope the present paper may tend to make clear the proper course of action and perhaps serve to save human life.

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GONORRHEAL PUERPERAL FEVER.*

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It has long been observed that a latent gonorrheal process will, in the months following parturition, assume fresh virulence, spread to regions that had hitherto been free from its ravages and cause symptoms of a most serious character. Just at what time this extension occurs, or in what manner it is brought about, has thus far, however, not been sufficiently explained. Above all, has the profession at large failed to recognize the fact that puerperal wounds may be inoculated with the gonorrheal virus during delivery or within the first two weeks *post partum* and that such infection may give rise to symptoms, which, but for the bacteriologic findings and subsequent course, closely resemble streptococcic puerperal fever. The bare fact of such occurrence is, to be sure, mentioned in most of our text-books on obstetrics, but the subject here is not given the consideration it deserves. The frequency of its occurrence, above all, is greatly underestimated. When we consider the number of pregnant women who are infected with gonorrhea—quite frequently infection and conception occur at the same time—we must indeed wonder that the process does not cause trouble oftener than is the case. The percentage of gonorrhea in pregnant women varies, in the statistics of Buckhardt, Oppenheimer, v. Steinbuchel and Sanger, from 18.1 per cent. to 27.7 per cent. Of this large number fortunately only a small proportion show an extension of the process in the puerperium. Bumm holds the gonococcus responsible in 7 per cent. of his 166 cases of puerperal infection; and others, such as Koenig, find even a considerably larger proportion (28 per cent.) due to this micro-organism. The subject is one, therefore, not deserving the neglect it has so far received at our hands.

In American literature I was able to find only the reports of Cumston and Rosenberg upon this question. I have therefore felt justified in publishing the following five cases in full. The patients were all treated at the Female Hospital and I am indebted to the Superintendent of that institution, Dr. N. J. Hawley, for permission to report them:

Case No. 1.—M. V., nineteen years of age, domestic, entered the

*Read before the Alumni Association of Washington University Medical Department, March 12, 1903.

hospital January 27, 1899. She had no previous labors and had no leucorrheal discharge. On May 15th, was delivered of a healthy child. In delivering the placenta the membranes were caught in the cervical canal, and with difficulty extracted by the finger of the accoucheur. On the seventh day *post partum*, the patient's temperature rose to 102° with severe colicky pains in the abdomen. The following day the temperature had risen to 103° and the lochia were observed to be profuse, somewhat offensive, glairy and yellowish, and contained gonococci in large numbers. The patient was curetted and a few shreds of membranes and blood clots removed. The temperature fell to normal two days after curettement, but in the next two weeks it occasionally rose to 100.6° . She left the hospital on June 15th, one month after delivery, and at that time still showed considerable yellowish discharge from the uterus but no more pain or temperature. The uterus had never been much enlarged and the adnexa were still apparently free from inflammation. One year later the patient returned with double-sided tubal swellings. Gonococci were found in the cervical secretion. A double salpingectomy was performed.

Case No. 2.—M. H., colored, aged twenty years, house-girl, entered hospital April 24, 1899. She had never before been pregnant and gave no history of a previous leucorrhea. On May 28th she was delivered of a full term child. The perineum was lacerated to the second degree. On the sixth day, *post partum*, the temperature rose to 100.6° and stayed between 99.5° and 100.5° for three days. The lochial discharge was yellowish and profuse, with some slight odor. On the eleventh day the temperature rose to 102° and the following afternoon to 105° ; pulse 120. There was considerable pain and tenderness in the lower abdomen. Curettement on the same day brought away a few small shreds of membrane, and a good deal of glairy, yellowish pus from the uterus. Gonococci were found in the lochia. On the thirteenth day the temperature had fallen to 100° and on the fourteenth to normal. The discharge continued profuse and the temperature again rose to 101.6° . An intra-uterine douche was given, but this was followed by renewed attacks of pain, a chill and fever. Antistreptococcic serum (10 c.c.) was injected four times without beneficial result. The temperature continued between 101° and 102° . On June 27th, one month after childbirth, patient was still in bed, suffering pain. Unguentum Credé was applied twice daily, in teaspoonful doses with good results. The patient did not leave the hospital until August 2, at which time uterus and adnexa were found to be normal.

Case No. 3.—N. T., nineteen years, servant, entered hospital June

26, 1899. She had no serious illness in her life and had never before been pregnant except the previous summer, when after three months' gestation, she had had a miscarriage. This, however, left no untoward results. She had no leucorrhea on entering, but said that three months ago she had had a profuse yellowish discharge with burning urination. This discharge she attributes to infection from her husband, who had had a similar discharge the week previous. Of late the discharge and painful micturition had rapidly diminished. She was eight months pregnant. The night that she entered the hospital labor pains began. Delivery was uneventful except for an adherent placenta, which had to be manually removed. The puerperium was normal until the fourth day, when a temperature of 100.4° was noted. The lochia were not at all offensive but quite profuse and rather yellowish in color. Bichloride (1-4000) vaginal douches were repeatedly given in the next two days without effect on the discharge. On the eighth day the temperature suddenly rose to 103° with slight chilly sensations and severe pains in the lower abdomen. Microscopic examination of the pad showed gonococci in large numbers. That evening the uterus was curetted but no shreds of placenta or membranes were found, only large quantities of a yellowish pus which showed an absolutely pure culture of typical intracellular gonococci. After curettement there was a gradual fall of temperature to 99° on the following day. The uterus, though comparatively small, had been very sensitive to pressure and remained so for several days afterwards. On July 13th, eight days after curettement, patient was taken from hospital by friends in spite of advice to the contrary. At that time there was still some discharge from the vagina containing gonococci but no more pain or fever. The uterus was no longer painful and the adnexa were not swollen.

Case No. 4.—L. C., eighteen years, house-girl, entered hospital January 15, 1900. No previous pregnancies. Last menstruation on July 1, 1899. Has had some leucorrhea. Pains began on March 30th, and delivery was in every way normal. On the fourth day, *post partum*, temperature rose to 100.2° ; patient, however, felt perfectly well. On the sixth day, temperature 101.2° , pulse 88, lochia profuse, yellowish and glairy; slight pain on pressure over the uterus. On the seventh day, morning, temperature 100.6° , pulse 88; afternoon, temperature 103.2° , pulse 100. There were now colicky pains in the lower abdomen and sensitiveness on pressure over the uterus. The latter was not enlarged, reaching only about one inch above the symphysis. The vaginal discharge showed gonococci in large numbers. An intra-uterine douche (1-6000 bichloride) was given and the pus washed out

from the uterus showed gonococci in pure culture. On the eighth day, the temperature had fallen to 101° and on the ninth day to normal. It remained between 98.6° and 98.8° during the following week, throughout which time the patient received frequent vaginal douches. On April 16th, when the case left the hospital, vaginal examination showed the uterus of normal size, not tender, no swelling of either adnexa, slight vaginal discharge.

Case 5.—A. H., eighteen years, colored, house-girl, entered hospital June 1, 1900. She had never previously been pregnant and had missed menses for seven months. Acuminate warts were found about the vulva and vagina in large clusters. Patient had a yellowish discharge from the vagina and a urethritis, the secretion from which showed gonococci. June 3d, the child was prematurely born. In the course of the delivery (breech presentation) the hand was introduced part way into the uterine cavity in the effort to keep the head well flexed. The placenta came away entire. During the first week after delivery there was only a slight elevation of temperature, the highest being 101° . Lochia profuse. On the morning of the seventh day, the patient had a chill followed by a fever of 103.6° , pulse 108, severe colicky pains in lower abdomen. The temperature remained over 102° throughout that day and the pains continued. The discharge had a disagreeable odor but was not offensive. In character it was glairy, profuse and yellowish. Gonococci were found in large numbers. Orders were given for three vaginal douches daily, and stupes when in pain. On the eighth day the temperature was still 103° , pulse 110, but fell to 101° during the next three days with slight abatement of pains. On the twelfth day the pains again became severe and continued thus for ten days with the fever ranging from 101° to 102.5° and the pulse at about 105. Vaginal examination at the time, difficult owing to great tenderness and some tympanites, revealed uterus large and fixed, some resistance in both tubal regions. Several intra-uterine douches of hot sterile water were given, bringing away considerable quantities of yellowish pus but no placental tissue. In spite of protest the patient was taken home on the twenty-second day. She returned three and a half months later with symptoms of pelvic inflammatory troubles. The condylomata acuminati about the genitals had become even more numerous than before. Internal examination showed the right tube thickened and painful, profuse yellowish discharge from the uterus.

During the period in which the above-described five cases of gonorrheal puerperal fever occurred, there were confined at the hospital 343 women. This would make the percentage of such infection in all cases

1.4 per cent. Besides the cases reported, there occurred during this time 24 cases of puerperal infection, due to other micro-organisms; most of these were of a mild nature, only one, due to the streptococcus pyogenes, running a fatal course. This would make the gonococcus the etiological factor in 17 per cent. of all cases of endometritis in *puerperio*, which figure is about midway between those of Bumm and Krönig.

It is claimed by Olshausen and Baumm that these cases of gonorrheal infection are not properly to be classed as puerperal fever, since they involve merely an extension of a process already existing in the patient. Yet, surely, these authors would not hesitate to apply the term, "puerperal fever" to a streptococcus infection of the uterus, following erysipelas in the same patient, in which a similar extension of a previous infection takes place. There is some justification, to be sure, in denying the term to endometritis occurring three to four weeks *post partum*; but, these I do not wish to include in my consideration of gonorrheal puerperal fever. A number of cases develop symptoms within the first 14 days, and here we undoubtedly have an infection of the puerperal wounds themselves.

These gonorrheal cases have served, to a certain extent, to clear up the mystery of autogenous infection. Granted an endocervicitis gonorrhoeica, and, without an internal examination during labor or afterwards, merely by the rapid proliferation in the puerperium of the germs present, an entrance may be effected into the uterine cavity causing a general infection of that organ.

In general the puerperal infection by the gonococcus is, however, due to some procedure in labor whereby the finger, hand or instruments of the accoucheur has entered the uterine cavity and thus of necessity carried upward the germs lying in the cervical canal. It will be noted that in three of the five cases in my list, there is record of intra-uterine manipulation during labor.

The puerperal state has long been known as an excellent breeding place for bacteria, and the gonococcus is no exception to the rule. Once having gained an entry into the uterine cavity, it multiplies at a prodigious rate. The increased lumen of the uterine end of the tube facilitates its entrance into this organ and thence it may rapidly ascend to the peritoneum. In this way, tubal, ovarian or pelvic abscesses, due to gonococci, have developed within two weeks after childbirth. In accord with this rapid development the lochial discharge at this time will be found to contain almost a pure culture of gonococci. Whereas, during pregnancy, but few gonococci, if any, can be found in the cer-

vical secretion of infected cases, the lochia beginning from the second to the fifth day *post partum*, or, are loaded with them and, as Bumm expresses it, the individual cocci are unusually "large and fat." I was particularly impressed with this increase in size in my examinations. Apparently the growth of the gonococcus inhibits the development of other bacteria in the lochial discharge, for even where specimens were not obtained directly from the uterus, but were taken from the vulvar pads, very few other bacteria outside of gonococci were to be seen.

So recent has been the recognition of this form of puerperal fever and so few have done careful work upon this subject that we still remain without a well-defined clinical picture of the disease. It is for this reason that I have presented this part of my subject in some detail.

For the first five days after delivery there is usually no disturbance of any kind, on the part of the mother. Calmann occasionally observed a slight rise in temperature to 100.5° on the third or fourth day. This was also noted in all of my five cases. There is usually a corresponding slight increase in the pulse-rate, but on the whole, the patient feels perfectly well, unless it be for some sensitiveness about the cornua of the uterus. As a rule, however, the puerperium seems to run a perfectly normal course for the first six days. The lochial discharge is the first thing to call the physician's attention to some abnormal process in the uterus. By the sixth day it has become very profuse and has a peculiar, rather disagreeable odor, differing from the foul smell of retained placental tissue and also from the stale odor of normal lochia. In my own observations, I was particularly struck with another feature of the discharge,—the large amount of mucus present,—giving it a glairy appearance and tenacious character. Its color is usually more yellow than normal. Characteristic, too, is its unusually irritating and biting nature, often giving rise to considerable soreness about the wounds of the external genitals and occasionally even causing an intertrigo.

At the end of the first week, or the beginning of the second, we have the first general evidence of an infection. There are usually rigors or even in some cases, a distinct chill followed by fever. Within 24 hours the temperature has risen to 103° to 104° ; the pulse increasing to 100 to 110 per minute, but full and regular. There is often headache, aches in the limbs, general malaise, rarely nausea or vomiting. On being called to the patient, we usually find her suffering from intense colicky pains in the lower abdomen. There is considerable tympanites and extreme sensitiveness over the entire abdomen. The fever will usually remain constantly high for about two to three days without the irregu-

lar rise and fall that is so typical of streptococcic infection. Then it will gradually subside to normal.

The pulse which has always been comparatively infrequent, returns to normal. The tongue is moist. The patient eats heartily and sleeps well. The abdomen is soft, but in the region of the uterus and tubes there is still considerable tenderness and in some cases the swollen tubes can be palpated through the abdomen.

Such is the typical course of a severe attack. Naturally, many a case runs a more benignant course and is then often overlooked. There may be fever for but a single day and not over 101° . This is particularly true of the cases in which the first symptoms occur later, about the twelfth to fourteenth day. Here the patient has usually already risen from the bed and the immediate symptoms may be so mild as to permit of the patient's being up and around. It is held by Bumm, Sanger and Strassmann that *only the late mild form is due to the gonococcus alone; that all cases in which a high fever occurs within the first eight days, are due to mixed infection.* This view is opposed to the findings of Kronig and Calmann. Of Cumston's five cases, two show a high fever as early as the fifth day. Particularly instructive in this connection are *Cases 3 and 4 of my series, in which upon the seventh and eighth days respectively, a temperature of 103° was recorded. Here the secretion was obtained directly from the uterine cavity under aseptic conditions, and the fact that the careful examination of several specimens showed the presence of gonococci in pure culture, is surely conclusive proof that here the symptoms cannot be explained on the basis of a mixed infection.* Even sapremia could be excluded in these cases, as in both an intra-uterine examination revealed the absence of all placental remnants or old bloodclots.

The course of gonorrheal puerperal fever, as compared with infection by other bacteria, is, as has been indicated, a very mild one. The fever usually lasts but a few days. The patient soon regains strength and appetite and as a rule hardly considers herself ill. The process is by no means, however, so quickly eradicated. It usually enters upon a sub-acute or chronic state in which the patient, besides suffering from a copious purulent discharge, has occasional attacks of severe pain and may suffer from persistent uterine hemorrhages. This often incapacitates them from work and where a collection of pus has formed in the tube or ovary, may require operative interference. A point that Fehling lays stress on, is that puerperal gonorrheal salpingitis is usually one-sided. He considers this of diagnostic importance and to those accustomed to regard one-sided puerperal adnex-tumors as streptococcic

in origin, rather subversive of former ideas. A parametritis is rarely seen, although Wertheim has demonstrated that gonococci can cause such an infection of the pelvic cellular tissue. Localized pelvic peritonitis is frequent on the other hand, and Olshausen has recently reported a reliable case of fatal general peritonitis following the rupture of a gonorrheal pus-sac. Such cases, however, must always arouse strong suspicion of a mixed infection.

More remote sequelæ are also recorded. Dabney and Harris of Johns Hopkins, report a case of fatal endocarditis in which gonococci were found on the valves. Similarly Hallé speaks of a patient with gonorrheal septicemia in which the endocardium was attacked. Arthritis is another not infrequent complication. The knee-joint is here the favorite site, though polyarthritis is also occasionally seen. For the child there is the increased danger of ophthalmia. A careless mother or nurse may readily cause such an infection *post partum*. The fact that none of the five children in our cases developed any eye trouble, may be partly ascribed to the comparative freedom of the genital tract from gonococci previous to and during delivery; partly to the prophylactic use of the 2-per-cent. silver nitrate solution, according to Credé.

In diagnosis the differentiation will be from streptococcic infection on the one hand and from sapremia on the other. From the former, gonorrheal puerperal fever is distinguished by its somewhat later onset (seventh to eighth day instead of fourth to fifth day), by the moderate degree of fever (103° in contrast to 105°), by the absence of signs of severe intoxication and by the regular and proportionately slow pulse. After 24 to 48 hours all doubt in the diagnosis is usually removed by the gradual remission of the fever. In sapremia we usually have a history of retained placental tissue, a foul-smelling discharge often attended by considerable bleeding, or at times a sudden blocking up of the lochia, and a large, soft, and rather insensitive uterus. In contrast thereto, we have in gonorrheal cases, a free yellowish, glairy discharge and a small, rather firm, but exquisitely tender uterus. In typical cases, therefore, the clinical diagnosis of gonorrheal puerperal fever is not so difficult. In atypical ones we must rest our diagnosis upon the microscopic examination of the lochia. *Frequent careful examination of the lochial discharge is, therefore, an absolute necessity in the diagnosis of every case of fever in the puerperium.*

The most essential feature in the treatment of these cases, as in that of other gonorrheal affections, lies in prophylaxis. And this prophylaxis should begin at a very early date. Every pregnant woman should be examined with a view to detecting a latent gonorrhea. Here the his-

tory of the case is usually of minor importance. Increased vaginal discharge, frequent, even burning urination, are so often found accompanying normal pregnancy, that only where these symptoms are very marked, do they possess any value. The objective findings are the essential ones. Pressure should always be made upwards against the urethra, in the digital examination, and if any secretion be present, no matter how slight, it should be carefully examined for gonococci. If the meatus of the Bartholinian glands be reddened or condylomata acuminata present, it must always be strong presumptive evidence of a gonorrhea. In doubtful cases we are justified in examining the cervix and obtaining some of its secretion for microscopic investigation. If the result is positive, treatment should begin at once. Just how far this treatment can safely go is a matter of opinion. Many will prefer to confine themselves to the giving of luke-warm douches and alkaline diuretics. Others, like Calmann, are not afraid to venture upon more vigorous treatment—such as the application of ointments to the cervix. On one point all are agreed, however, *i.e.*, that condylomata should not be cauterized or cut during pregnancy, as this almost invariably arouses premature labor pains.

During labor, prophylaxis is of even greater importance. If there are evidences of a gonorrhea, all internal examinations are to be avoided, unless special indications arise. Should such an examination prove necessary, it would be well to precede it by an antiseptic vaginal douche. This douche should never be omitted, where operative interference has been deemed necessary. Naturally, one will only resort to such operative measures when absolutely compelled to, for every intra-uterine manipulation in these gonorrheal cases is fraught with considerable danger. Above all does this apply to the manual delivery of the placenta. Small bits of placenta or membranes should be allowed to come away of themselves. Wherever an intra-uterine manipulation has been made, it should be followed by weakly antiseptic intra-uterine irrigation.

In the puerperium our efforts must be directed to the careful examination of the lochial discharge. Should the number of gonococci be markedly increased, even if no symptoms of an ascending process have developed, we must order absolute rest in bed for from 14 to 16 days and frequent hot antiseptic vaginal douches. Of course, all prophylaxis may be of no avail but at any rate we can feel that we have done all in our power to prevent the inoculation of the gonococci upon new fields.

In the treatment of this condition we come upon the greatest variety of opinions. In our series a rather vigorous plan of procedure was

adopted. In all cases either an intra-uterine douche or curettement was undertaken. In spite of the apparent success of this method in Cases 3 and 4 I would be far from advocating it without reserve. To give an idea of the wide difference of opinion on this subject, I cite the following:

RUNGE ("Geburtshilfe," 4th edition, p. 547): "Absolute rest is of more service than active measures such as douches, which are liable to further the extension of the process upwards."

FEHLING ("Physiologie und Pathologie des Wochenbettes," p. 165): "As a rule, vaginal douches together with ergotin internally will produce a sufficient decline in the fever; if not, then an intra-uterine douche will give comparatively good results, since the gonococci certainly do not penetrate so deeply into the uterine wall as streptococci."

DAVIS ("American Text-Book of Obstetrics," p. 239): "During the puerperal period the occurrence of septic inflammation in and about the uterus should be treated promptly by intra-uterine antisepsis, or as soon as possible by abdominal incision. It is folly to treat the insidious ravages of gonorrhea in the connective tissue, the peritoneum and contents of the pelvis occurring after labor by any but prompt surgical measures. Exploratory abdominal incision is far more conservative in these cases than delay."

CALMANN ("Diagnose und Behandlung der Gonorrhoe beim Weibe," p. 46): Advises absolute rest, the application of cold to the abdomen and if necessary, opium in the acute stage of ascending gonorrheal puerperal infection. He warns against even vaginal douches until all fever or pain on pressure has disappeared. The patient is to stay in bed for from four to seven weeks.

As yet, insufficient data has been collected to allow the deduction of positive conclusions as to treatment. The general tendency seems, however, to be against the radical ideas of such men as Davis. This is in accord with results in other forms of acute gonorrhea. Absolute rest is of the greatest importance but it conflicts sometimes with the proper removal of the purulent secretions. In all of my cases a considerable quantity of pus collected within the uterine cavity and distinct relief was experienced when that cavity was emptied. I cannot imagine that a single antiseptic intra-uterine douche, if care is taken that the return flow is not checked, involves more risk of a salpingitis, than if the secretion is allowed to stagnate in the uterine cavity. Hence, I would be in favor of giving such a douche in all cases in which vaginal douches alone have not effected relief of pain and fever. As far as the antiseptics used in the intra-uterine douches are concerned, bichlorid even in

1-6000 dilution, may give rise to fatal intoxication,—hence, lysol in $\frac{1}{8}$ to $\frac{1}{4}$ -per-cent. solution, or 50 per cent. alcohol, is, on the whole, preferable.

Curettement, on the other hand, involves too much risk of a general infection. By such a procedure, we open up the blood and lymph channels and gonococci may thus be carried to the joints, giving rise to a most troublesome arthritis, or what is worse, be implanted upon the endocardium and produce a fatal cardiac affection. Whenever a localized collection of pus can be made out in the pelvis, and this collection does not show a tendency to absorption, vaginal incision and drainage will have to be resorted to. Calmann's suggestion to keep the patient in bed, for four to seven weeks, is good, but difficult to carry out in practice, as the patient usually feels so well that she cannot see the necessity of it.

To summarize in brief the essential points regarding gonorrheal puerperal fever:

First.—The gonococcus is the etiological factor in about one-sixth of all cases of puerperal infection.

Second.—Although almost invariably secondary to a gonorrheal process elsewhere, this trouble involves an infection of the puerperal wounds, and hence must be classified under the head of puerperal fever.

Third.—The gonococcus may gain access to the uterine cavity without any internal examination being made. Many a case of so-called autogenous infection may be explained in this way.

Fourth.—More frequently the process is brought about by digital examinations and operative manipulations, particularly intra-uterine, in the delivery of the child and placenta.

Fifth.—The infection shows itself about the sixth or eighth day *post-partum*, by rigors, a temperature of 103° and severe abdominal pains. The fever is usually of short duration and the further course of the disease is mild, but liable to become chronic.

Sixth.—Cases in which the temperature begins to rise as early as the sixth day, and runs up to 103° and 104° are not necessarily caused by a mixed infection, as Bumm and others hold, but can very well be due, as proven in cases 3 and 4 of my series, to the gonococcus alone.

Seventh.—The diagnosis is based on the rather late onset—the slow regular pulse—the moderate and steady elevation of temperature—the profuse purulent, glairy discharge, and, above all, the presence of gonococci in the lochia.

Eighth.—Prophylaxis is of more benefit than treatment. All pregnant women, having gonorrhea, should be delivered as far as possible

without internal examination. Treatment should be limited to one or two intra-uterine douches, frequent vaginal irrigations and rest in bed for a prolonged period of time.

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CONGENITAL ABSENCE OF THE UTERUS.

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I.

In November, 1895, I reported¹ a case of congenital absence of the uterus, the first I had encountered in about 4,000 women personally examined by me. Since then I have seen in hospital clinical experience three additional cases, making four cases in somewhat over 10,000 women that I have had occasion to examine. This gives for me a frequency of one case in about 2,500 women, a percentage which I believe to be unduly large, since we as gynecologists see only those women who believe that they are not sound in their genital organs and who come for a digital exploration. Moreover, one man will see incidentally more of a certain rare condition than another of equal or larger experience. Thus, a gynecologist of large experience who has examined many thousand women informs me that he has never seen a case of congenital absence of the uterus. The true percentage, I believe is nearer one case in 5,000 than one in 2,500 women. Burrage², in 1897, collected references to 350 cases of absence of the uterus reported by 239 authors from earliest times up to that date, and, roughly estimated, about 300 of these cases were noted in the last century. This would seem to indicate even a smaller percentage than I have suggested.

Case 1.—The history of the case I reported is as follows: Clara F., a Russian girl of rather pleasing cast of features, and decidedly more intelligent than most of the women exhibiting the same anatomic condition, presented herself at the clinic of Prof. Harris A. Slocum, in the Polyclinic Hospital, on the evening of April 9, 1895. She stated that she was 18 years of age. She was somewhat undersized, but fairly well nourished. Her general complexion was dark, and her appearance mature. In no way did her physique suggest the existence of any physical defect. Her voice was full and mature, her manner timid. She further stated that she had never seen her menses, that she suffered considerably from headaches, mainly frontal in situation, that her habit was markedly constipated, that she was subject to severe cardiac palpitation, and that she often complained of vague, low-down abdominal pains. As far as could be ascertained she did not at any time suffer from menstrual molimina. Stethoscopic examination of the heart revealed a loud murmur associated with a condition of mitral stenosis. This cardiac condition was very materially improved under the exhibition of a mixture

consisting of the fluid extract of *cactus grandiflorus*, strychnin, compound syrup of the hypophosphites, and compound tincture of gentian. The action of the heart under this formula became more regular, and the distressing symptoms largely disappeared. On investigating the cause of the amenorrhea, an interesting state of affairs was discovered. It was found impossible to introduce the finger into the vaginal tract, although the vulvar orifice appeared to be normal in every respect. The pubic hairs were fairly well developed, but there was a complete absence of hairs in the axillæ. The mammæ were no larger than those of a man. Rectal exploration of the pelvis was then resorted to, but no trace of a uterine body could be detected, the finger of the hand placed above the pubic symphysis coming in contact with the rectal finger in all directions. This examination did not elicit any tenderness, and the abdominal walls were remarkably lax for a virgin, thereby still further facilitating the exploration. The uterine sound introduced into the vagina reached the upper terminus of that organ one and a half inches above the vulvar orifice. The woman was apprised of her condition, but she remained under observation for a few weeks only.

The additional cases are now reported for the first time.

Case 2.—Yedda W., a Russian girl, 20 years of age, presented herself at the clinic in the Polyclinic Hospital in February, 1897, to ascertain why she had never seen her monthly sickness. In sharp contradistinction to the foregoing case this young woman was coarse and repulsive looking. She had the flattened nose and heavy features of certain of the Russian peasant class, and her voice was harsh and strident. She was short and clumsily built, and gave the appearance of insufficient general development. She stated that her menses had never appeared and that she had at no time experienced any of the menstrual molimina. An examination of the chest showed a lack of development of the mammary glands, which were no larger than those of the ordinary male individual. There were no axillary hairs; the pelvic contour was contracted and closely approximated that of the male. There were a few straggling pubic hairs. The labia majora were small and flaccid and the labia minora very much under size. An attempt at digital exploration failed. There was a small canal about three-quarters of an inch in depth, barely admitting the index finger and ending in a cul-de-sac without a cervical projection. Subsequent bimanual exploration performed during etherization and with the left index finger introduced into the rectum showed an apparent total absence of the usual pelvic viscera. The patient stated that she experienced none of the normal attraction

to the opposite sex. As is usually the case, the girl disappeared shortly after she learned of her true physical condition.

Case 3.—Millie Dariana, a tall and attractive-looking Italian girl, aged 18 years, came to the clinic at the Pennsylvania Hospital on the 14th of September, 1901. She stated that she had been married six months, but that the marital relation had never been possible and she had come to learn why this was. Inquiry elicited the fact that she had never menstruated, but that every month she suffered from moderately severe pain in the lower abdominal region, but without cramps. Her sister, older than herself, had menstruated first when seventeen years of age. To all appearances this girl was normally developed. Her breasts were full but not large. There was a normal growth of axillary and pubic hair. The labia majora were of average size, and the nymphæ small but well marked. The rudimentary vagina had a depth of but one-half the length of the first phalanx of the index finger and ended, as usually, in a small cul-de-sac. Bimanual examination *per rectum* showed an apparent absence of the internal organs of generation, the tips of the fingers of the two hands coming readily in contact at every point through the abdominal and rectal walls. Upon being informed of her condition, the patient left and did not return.

Case 4.—Lucy Benfourri, an Italian girl, 19 years of age, presented herself in the dispensary service of the Pennsylvania Hospital on the 28th of October, 1902. She was single and had never menstruated, but every month for the past year had experienced some pain in the left inguinal region, the pain persisting for two days. She had frequently suffered with headache during the past seven months, accompanied with vertigo, malaise and anorexia. The girl was anemic and under size, not more than four feet ten inches in height, and generally poorly developed. She was a dyspeptic, a sufferer from marked constipation, and complained of palpitation on exertion. There was a slight growth of pubic and axillary hair; the labia majora were but poorly developed, and there was no trace of the labia minora. The urethral orifice was situated at the upper angle of a triangular expanse of what was believed to be an imperforate membrane occluding the vaginal orifice. Rectal examination, however, showed that there was no trace of vagina, uterus or other pelvic organ. The administration of Bland's pills and arsenic had largely corrected the anemia. The patient denied the existence of the genital sense, and promptly disappeared after learning her true condition.

Since Burrage's paper was published there have been, as far as I

have been able to ascertain, but two other cases of congenital absence of the uterus recorded in the world's literature, as follows:

McCann⁶: A case of entire absence of all generative organs, vagina included; the pubic hair was normally developed.

Leech⁵: Complete absence of the vagina and uterus.

While preparing this paper the following letter containing the records of another case as yet unpublished, was received in the editorial office of the *Philadelphia Medical Journal*:

To the Editor of the *Philadelphia Medical Journal*:

Recently a Karen woman, about 20 years of age, came to me stating that her menses had never appeared, and that, although married for three years, she had never conceived. I made an examination and found externally the appearance of the parts were normal. On attempting to introduce my finger into the vagina, I found it entirely obstructed by a corrugated slightly elastic mucous membrane. I examined closely with a probe for any perforation, but none was apparent. After the bowel had been emptied by enema, I made an examination per rectum, and failed to find the slightest trace of the uterus or ovaries or any body simulating them. I therefore came to the conclusion that the woman was devoid of vagina, uterus and ovaries. She complained of no discomfort, and the reason for the desire for the examination was due to the husband's wishing to know the exact condition of things.

Very truly yours,

E. S. CORSON, M.D., of Toungoo, Burma.

(*Phila. Med. Jour.*, March 28, 1903.)

II.

The etiology of conditions such as this must necessarily be more or less obscure. It is generally admitted as beyond controversy that both the uterus and Fallopian tubes are derived from the embryonic Müllerian ducts. Williams,⁷ in his recent admirable work, states that "according to His, the first signs of their development can be noted in embryos having a body-length of from 7 to 7.5 millimeters, when a thickening may be noticed in the celomic epithelium on the outer margin of each Wolffian body. These gradually become converted into two epithelial ducts, which converge and eventually meet together in the middle line, terminating in the urogenital sinus. The Müllerian ducts reach the urogenital sinus in embryos having a body-length of 2.5 to 3.5 centimeters. Their upper ends form the Fallopian tubes, while their lower portions fuse together to form the uterus and vagina. The fusion of the Müllerian ducts is usually completed at about the

third month, though the point at which the process is to occur is indicated at a much earlier period by the position of the round ligament." It is plainly to be seen, then, that owing to their distinct origin ovaries may be present in the absence of the uterus and vagina, and patients suffering from this curious defect may present all the menstrual molimina, including ovarian dysmenorrhea, backache and general malaise, as well as possess a certain amount of the genital sense.

Now, as to what factors are at work in the early weeks of gestation to prevent the development of these ducts and their ultimate fusion, nothing definite is known. An interesting theory has been recently advanced by Ballantyne¹, who would claim that all congenital anomalies, such as absence or rudimentary development of organs, or double formations, all of which are arrestments of normal embryologic processes or disturbances of embryogenesis, are brought about by the action of traumatism, microbes, or toxins upon the embryo *in utero*. While this has not been absolutely demonstrated, it is a very plausible theory, and one which may be accepted until controverted or supplanted by a better. Be this as it may, it remains true that the variety of the congenital defect will depend upon the time in embryogenesis at which the disturbing factor becomes operative. Most commonly, judging from the comparative frequency of the varieties, this occurs late in embryonic life, after the ducts of Müller have attained their full maturity, but prior to the time at which they have fully coalesced to form the generative organs. The various forms of double uteri and vaginæ are thus evolved. If, however, the arrest of development occur prior to the formation of the uterus by fusion of these ducts, or prior to the development of the ducts of Müller themselves, either one or both of these structures fail to appear; in the former instance there results a uterus unicornis, or one formed by but a single Müllerian duct; in the latter case no trace of the uterus can be detected on manipulation, even when the patient is completely relaxed under the influence of an anesthetic. If, however, the pelvic cavities of such individuals could be examined carefully after death, it is not improbable that in almost all, if not in every case, some trace of the missing structures could be detected, microscopically if not macroscopically, in the form of fragments of rudimentary muscular tissue. In the 360 cases collected by Burrage, there were but 35 autopsies, 24 of which were on the bodies of adults, 2 on girls, 10 and 12 years old, respectively; the rest being on monstrosities and fetuses with absence of other organs, making prolonged life impossible. In all of the autopsies on the bodies of adults and girls there were noted in every case rudimentary tissues representing the

uterus, generally occurring as one or two little knobs of tissue the size of hazelnuts or as a thin band of muscular tissue lying between the rectum and bladder. The ovaries were found to be present in all but six; the tubes also were present in all but six cases, though often without a canal.

The grouping of these congenital defects as proposed by McCann is as good as any yet suggested, and is as follows: *1st.* Cases in which no uterus is present, the vagina being a cul-de-sac. (In this class are to be found the first three cases reported in this paper, the last case being even a more pronounced abnormality, or one resulting from an earlier beginning of the disturbance of embryogenesis). *2nd.* Cases in which, at the blind end of the vagina, a nodule is found occupying a central position; this nodule has no canal in its interior. *3rd.* Cases in which the nodule forms the lower portion of a small central body admitting the point of a probe. *4th.* Cases in which the probe can be passed for a distance of from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch into a body, cord-like or fusiform, occupying a position corresponding to the normal uterus. This group forms a transitional stage preliminary to the so-called *infantile uterus*, which is the normal condition in the female child at full term, and which may persist through adult life if the normal processes of post-natal growth are retarded. Jacobi,⁴ who has made a close study of these abnormal conditions, concludes that there may be noted the following varieties of genital defects in women: *1st.* Absence of the uterus with rudimentary development of the external genital organs (atrophy of the middle segment of the genital apparatus with imperfect development of the external segment). *2nd.* Absence of the uterus with hernia of the ovaries. *3rd.* An ambiguous and rudimentary condition of the external organs; the internal organs being masculine. *4th.* Ambiguous external organs, habitus masculine, the nature of the deep gland being uncertain. *5th.* External organs masculine, the internal feminine, habitus feminine. *6th.* External organs feminine, internal organs masculine. *7th.* The middle segment of the generative organs bisexual, the external masculine. *8th.* Bisexualism of the three segments.

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NOTE ON CALCIUM CHLORID IN HEMORRHAGE.

BY J. C. REEVE, JR., M.D.,
Dayton, Ohio.

Ten years ago Prof. A. E. Wright of the Netley Army Medical School, published in the *British Medical Journal* (July 29, 1893) an article on the influence of calcium salts on the coagulability of the blood and their use in the treatment of hemophilia. Since reading that very convincing report, the chlorid of calcium has figured in the writer's estimation as a hemostatic of no doubtful value. In numerous instances it has yielded excellent results in the control of bleeding. As is well known, it is relied on by Mayo Robson and others as a valuable means of forestalling cholemic hemorrhage in gall-bladder surgery. Yet it has received scant recognition by the profession in general. One of the latest works on therapeutics makes no mention of it. Certain writers have even disputed its utility. My interest in the drug has prompted me to report the following case:

A woman entered the hospital with profuse uterine hemorrhage. Circumstances prevented operative interference at the moment and calcium chlorid was therefore prescribed. Several hours later the resident physician summoned the writer in haste to see the woman under the belief that she had sustained inversion of the uterus. I found a firm pear-shaped body protruding seven inches from the vulva with blood still trickling over its surface. On examination the tumor was found to consist solely of concentric layers of coagulated blood which had grown, as a stalactite grows, by successive depositions. Since the coagulum had formed only after the exhibition of the calcium salt the experience may fairly be taken as going to prove the efficacy of the chlorid of calcium in raising the coagulability of the blood.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Joint Meeting with the Chicago Medical Society, March 18, 1903.

The *President*, DR. CHARLES S. BACON, in the Chair.

DEFINITION OF ACCOUCHEMENT FORCE AND THE INDICATIONS.

DR. CHARLES S. BACON contributed a paper with this title. Among other things, he stated that the term accouchement forcé is an imported one, and is applied to various methods of removing forcibly from the gravid uterus its contents when the cervix is closed or only partially dilated. It embraces two procedures, dilatation of the cervix, and the extraction of the contents of the uterus. Dilatation of the cervix may be accomplished in different ways. These ways were discussed at length.

He briefly described a few of the principal obstetric complications which call for the use of one or the other of the methods of forced delivery. Eclampsia is undoubtedly an obstetric complication in which accouchement forcé is most often used. If the cervix is dilated at the beginning of the eclamptic attack, the uterus should be emptied. But when the cervix is closed, there is still diversity of opinion as to the procedure that should be adopted. Formerly, accouchement forcé gave such bad results that it was generally condemned in the treatment of eclampsia, but within the last ten years it has come to be generally used. Other serious conditions of the mother which may demand forced delivery are severe anemia, weakness due to other organic diseases, as tuberculosis and heart disease. Antepartum hemorrhage is another condition which demands forced rapid delivery. That variety of antepartum hemorrhage due to premature detachment of the normally-seated placenta gives perhaps the most urgent indications for accouchement forcé. Those who have had experience in vaginal surgery would probably prefer in these cases not only the incision of Dührssen, but the extension of that incision through into the lower uterine segment, making what is now described as the vaginal Cesarean section.

Accouchement forcé in placenta previa, he said, has been used probably ever since this complication was known, and it is still used, too often improperly, owing to the conditions that are frequently present in placenta previa.

BAG AND HAND DILATATION.

DR. ROBERT L. DICKINSON, of Brooklyn, New York, by invitation, discussed this subject. He said that accouchement forcé is major surgery. These operations belong in the hospital operating room, as the grave conditions of eclampsia and placenta previa may be foretold. Barnes' bags are anatomic errors. The conical balloon of Champetier dried and broke apart on slight traction, while the undue elongation of the cone shoved the presenting part up out of the brim and permitted the cord to prolapse. The simple, strong, short cone of Voorhees, inelastic, thin enough to slip in, when rolled, wherever the finger tip will pass, with no stop-cock to get out of order, is durable, efficient and inexpensive.

For rapid dilation, the tube is pulled upon steadily or with intermissions; but if the normal process is to be simulated or expedited, the double-bag is raised and lowered, and contractions produced, or lessened, literally, turned on or off, as desired.

The disadvantages of dilation by these methods are the same that apply to all artificial methods of opening the cervix. Although the lips of the cervix are opened and separated thereby, thinning, retraction and effacement do not occur. At least, the normal disappearance of the cervix does not occur, unless the uterus is induced to take an active part. But the advantages of the balloon call for frequent use. The procedure more nearly resembles the normal process than any other method of artificial dilation. It inflicts less injury than any other. The outfit is light, inexpensive, and compact, and its use is within the range of the general practitioner. Its field is not small, for although its action is usually less rapid, like that of branched dilators or the hand, and though the most rigid conditions may not yield to it, yet it *has no rival at all for induction of labor, for inertia in the first stage, and as a tampon dilator in placenta previa with a thick, unyielding os.*

There is nothing so intelligent as the finger, nothing less dreaded, nothing so handy. It will always be the main resource, and this whether it is required to initiate labor by stripping the membranes or to stretch fully the cervix. Put the rubber cover on it and it is sterile. Give the hand time, and few cases can resist its action.

The disadvantages of manual dilation are: (1) Infection; overcome by the rubber glove. (2) Laceration; overcome by patient gentleness. (3) The swollen, contused and unthinned result, a drawback common to all artificial methods. (4) The difficulty in reaching or entering the internal os when the cervix stands far back in the pelvis, and is not to be coaxed within touch of the finger tip. This trouble is easily over-

come by the single tenaculum gently drawing downward on the anterior lip. And, lastly, there are occasional rings so rigid that no finger can pass them. For them, the knife or metal dilator is demanded. These in hospital work, we fearlessly cut wider, then deliver, and repair.

In the choice of the method of extraction, the American will often prefer the forceps where the German would bring down the foot. Whenever speed is the main consideration, one is obliged to turn. Whenever, in placenta previa, the head cannot be made to blockade the cervix, one must turn. Here version is our chief reliance; but its indiscriminate employment must be limited because of the danger of shock, sepsis and rupture. One may not inadvisedly add shock to shock, in blood loss or eclampsia. For induction in the latter months, and for inertia during labor, where other causes are eliminated, such as exhaustion, over-distension and malposition of passage or passenger, the bag comes first, then the hand, and the forceps finishes their work. In placenta previa the balloon should be used for the narrow cervix that bleeds, when the head will not plug it; version for the bad cases, since the thigh is the surest tampon. For brisk hemorrhage of detachment of a normally located placenta, the greatest speed is attained by manual or metal dilation. For the rigid cervix of the early months, for the unyielding girdle of the elderly primipara, for the gristly hardness of eclampsia, the powerful Bossi instrument is a great boon, and none of its imitators approach it.

ABDOMINAL AND VAGINAL CESAREAN SECTION AS A MEANS OF ACCOMPLISHING ACCOUCHEMENT FORCE.

DR. J. CLARENCE WEBSTER presented a paper on this subject. He stated that abdominal and vaginal Cesarean section are rarely necessary as means of rapid delivery. The latter procedure has been employed by very few operators. It is mainly due to Dührssen's advocacy, in 1896, that it has begun to attract notice. The technique of the operation was described in detail.

The essayist next considered abdominal and vaginal Cesarean section in relation to the various conditions in which accouchment forcé is most commonly employed.

In rare cases of eclampsia, it may be indicated *i. e.*, in contractions of the birth canal by pathological changes in the soft or hard parts which make delivery through it impossible. When also an eclamptic dies, the fetus being alive *in utero*, it is the duty of a physician, who may be present at the time of death, to advise immediate post-mortem Cesarean section. Bauer has recently reported eight such cases, in which four infants were saved. Vaginal Cesarean section is to be recommended in

cases of eclampsia in pregnancy or in early labor in which the cervix is rigid and difficult to dilate.

Within the last few years, abdominal Cesarean section has been performed in several cases of placenta previa. This procedure has been widely criticized. If women were always in hospitals, where the operation could be done promptly by an expert operator immediately after the diagnosis was made, the essayist thinks the results might be more satisfactory, both to mother and infant, than those obtained by all other methods of treating placenta previa; but under the conditions which exist in ordinary private practice, the results would undoubtedly be worse.

Although several obstetricians have suggested abdominal Cesarean section in certain cases of premature detachment of the normally situated placenta, it has been rarely employed. The operation, in the opinion of the essayist, should only be considered when it is impossible to carry out other procedures by the vaginal route. Vaginal Cesarean section is indicated in cases of accidental hemorrhage where the patient's condition is critical, and where the cervix cannot be rapidly dilated by the ordinary methods, providing a competent operator is at hand. In affections of the heart, lungs, kidneys, etc., where the mother is in danger, and rapid delivery indicated, this operation may be undertaken. In these various conditions, vaginal section is indicated where the cervix does not admit of easy dilatation. The abdominal operation should not be employed, save where there is no possibility of satisfactorily performing vaginal section.

CERVICAL INCISIONS IN LABOR.

DR. RUDOLPH W. HOLMES discussed this subject. He said that the use of cervical incisions is by no means a new obstetric procedure, as cutting operations upon unyielding cervixes have been fully recognized for a century or more.

He discussed the anatomic considerations, indications, essential indications, atresia of pregnancy, rigidity without closure of os, ventrofixation, contributory indications, premature rupture of membrane, generally contracted pelvis, eclampsia, heart disease, contraindications, dangers, the operation and technique.

In closing, he expressed his strong condemnation of the too common practice of using forceps through the partially dilated os. He believes that forceps were never intended for dilators. If an instrumental delivery is indicated and full dilatation is not present, some method of dilating the os must be used first. A great advance in the progress of general obstetric practice will be realized when the profession learns

that a partially dilated os is a positive contraindication to the use of forceps. Dr. Holmes concluded:

1. The contributions of Dührssen to the subject of cervical incisions are not sufficiently original to warrant a proprietary right in the nomenclature. Coutouly, Baudelocque, Bedford, Braun and Skutsch did much to develop our knowledge of the subject.

2. Effacement of the cervix is an indispensable prerequisite to the use of incisions. For this reason incisions are especially applicable to primiparas, and are often contraindicated in multiparas.

3. Incisions are indisputably of value, even necessary in essential indications. In contributory indications their use is a mooted question. The judgment of the operator must decide in individual cases.

4. Manual dilatation preliminary to incisions does not secure the best cervical condition for incisions.

5. Incisions always are potentially dangerous; dangers comprise infection, hemorrhage, and extensive lacerations beyond the vaginal vault.

6. Use of incisions demands an obstetric armamentarium, assistants, and a definite experience in obstetric procedures.

7. The details of the technique may be modified to suit the taste of the operator.

8. The minimum number of incisions to meet the exigencies of the case should be made.

9. Oblique incisions may be proven to be more advantageous as regards the after-effects than the usual quadrant cuts.

10. In the absence of hemorrhage or accessory lacerations, it is a mooted question whether the incisions should be sewed up or not.

11. Immediate delivery should follow the incisions.

BOSSI DILATOR AND ITS PLACE IN ACCOUCHEMENT FORCE.

DR. JOSEPH B. DE LEE discussed this subject. The inventor of this instrument had used it since 1890, and had shown it at several medical congresses, but few obstetricians had used it until recently. The dilator has been used with success recently in Dresden, Prague, Berlin, Paris, and several other foreign cities. Its use in this country has not been published, although the author finds that it has been employed at Johns Hopkins Hospital and at the Sloane Maternity, New York. The essayist has used the Bossi dilator three times.

Dührssen has made an exhaustive study of most of the reported cases, and concludes that the Bossi dilator is a dangerous, inefficient, and useless instrument. The literature on the subject is rapidly increas-

ing. The author's own opinion, based on three cases which he reported in detail, and a study of the many reported cases, is as follows:

1. There is a small field of usefulness for the instrument in cases where rapid dilatation of the cervix is necessary after effacement. Before effacement, the colpeurynter should be used. It will be more successful in multiparas.

2. The instrument will be useful in dilating the cervix in those cases in which manual dilatation would be successful. It possesses advantage over the hand in the asepsis and in that it is not so tiring, enabling the operator to carry out the subsequent delivery comfortably.

3. The instrument is not safe, but requires careful and skilled watchfulness, and one must search for and be ready to repair more or less extensive lacerations. These are greater in primiparas.

4. It should never be used in placenta previa.

5. It does not replace the colpeurynter, the use of the hand, or cervical incisions in all cases.

RUDOLPH W. HOLMES, *Editor*.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE: SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, February 26, 1903.

The *Chairman*, DR. L. J. LADINSKI, in the Chair.

SELF-RETAINING CELIOTOMY RETRACTOR.

DR. ARNOLD STURMDORF presented this instrument and claimed as its advantages that it does not bruise the tissues and, when placed in position, forms a metallic ellipse at the site of incision. The edges are so fashioned that the abdominal wall fits in the concave edges and thus prevents any slipping.

GRAVID UTERUS WITH CARCINOMA OF THE CERVIX.

DR. PHILANDER A. HARRIS presented a specimen which had been removed by vaginal hysterectomy from a woman, aged 36. She had had three children and had presented herself to him a year ago with a history of continuous hemorrhage and had had spottings of blood prior

to that time. From the appearance of the cervix he diagnosed cancer, and from other symptoms he considered her pregnant.



Specimen of Gravid Uterus with Carcinoma of the Cervix.

The specimen showed a fetus *in utero* with membranes and carcinoma of the cervix.

RECURRENT LEFT TUBAL PREGNANCY, WITH EXHIBITION OF THE TUBE.

DR. P. A. HARRIS also presented a specimen of what he believed was a recurrent tubal pregnancy. The case was as follows:

Mrs. E., aged 24, married five years. Had two miscarriages; the first in April, 1902, and the second in November, 1902. They were attended by severe colicky pains and tenderness in the hypogastric and left iliac regions, together with fainting spells and weakness. Afterwards, menstruation was irregular and characterized by scantiness of flow which disappeared in two days. The severe, colicky pains recurred at irregular intervals, sometimes with the accompaniment of painful urination. No history of leucorrhea.

Physical Examination. (Jan. 19, 1903.) Abdomen almost normally flat. Patient pale but lips of fairly good color. Uterus only slightly movable. A small, rather fixed mass felt to the left of the uterus, the

size of about half of one's fist. No caruncles on the urethra, or other evidences of any specific infection about the vulva or vagina. Os uteri small and closed. Cervix small and hard.

Diagnosis of Present Trouble. Ruptured tubal pregnancy.

Diagnosis of Previous Attacks. Also ruptured tubal pregnancy, recovered from.

Admitted to hospital, Jan. 21, 1903.



Specimen of tube.—Recurrent Left Tubal Pregnancy.



Transverse Section of Tube.—Recurrent Left Tubal Pregnancy.

Operation. Four-inch suprapubic incision. Abdomen contained about one pint of dark, fluid blood. Left tube ruptured close to the uterus with a cystic mass five-eighths of an inch in diameter, extruding therefrom.

The ampullar portion was sausage-shaped, less than one inch in diameter and over two inches long. Beneath the ovary, and beneath the os-

tium abdominale of the left tube, another cystic mass was found, bluish-gray in color, and about one inch in diameter.

The specimen was presented for diagnosis based upon macroscopic appearance. No chorionic villi were found.

ANTERIOR VAGINAL SECTION FOR ADHERENT RETROVERSION OF UTERUS.

DR. J. RIDDLE GOFFE read a paper with this title. In reference to the dynamics of the pelvis he said the uterus rested on its anterior face in a condition of unstable equilibrium. The principle invoked was suspension by ligaments, the uterosacral serving the most important function; so long as they retain their tone and length, retroversion is impossible. He thought some operation on these structures could be devised and though difficult in its performance could be done from above or by the vaginal route. The next most valuable tissue to utilize is the round ligament; when shortened it allows of normal mobility of the fundus and removes the strain from the uterosacral ligaments so that the latter can regain their tone. Wyford and many others found equally good results by operating through the vagina and doubling the ligaments upon themselves in accordance with the Wylie-Mann suggestion. In his first series of thirty cases there were three or four that were not perfectly satisfactory, but since then the results have been uniformly perfect, not only in relieving symptoms but in maintaining the uterus in normal position. It is not enough to hold the uterus in place but allowance must be made for gestation and parturition. He found no difficulty in dealing with adhesions through the anterior vaginal incision, although he did not hesitate to supplement it with an incision in the posterior fornix. All cases where the uterus and appendages lay in the true pelvis could be dealt with through the vaginal incision. The operation was absolutely free from danger to life, was devoid of painful convalescence, and left the patient free from any apparent marks upon the body of having been subjected to operation.

ABDOMINAL SECTION FOR ADHERENT RETROVERSION OF THE UTERUS.

DR. EGBERT H. GRANDIN read a paper with this title. The retrodisplaced uterus, due to some pathologic entity was what he considered and he would bear in mind the casual factors that held the uterus backward. The symptoms were due not only to a fixed uterus but to complications, such as pelvic peritonitis, which resulted in gluing the uterus backward and distorting the appendages. The symptomatology is due to the ab-

normal position of the uterus and adjacent organs interfering with the pelvic circulation. The uterus becomes large and heavy, the broad ligaments varicosed, and the functions of the bladder and rectum interfered with. One is called on first to tell what is present by sense of touch, and second, to apply such measures as would best relieve the symptoms. He advocated the abdominal incision because, with the parts exposed to full view, he could break up adhesions, do conservative work on tubes and ovaries if necessary, and could remove the appendix if diseased. What was very important, he could lift the sagging uterus and thus restore the equilibrium of uterine and peri-uterine circulation. Sight aided touch and to attempt to work through the vagina he believed was doing blind, imperfect, and more dangerous work. One was not justified in attempting through the posterior fornix to break up adhesions, pull down ovaries and pack tubes in gauze thus forming adhesions. He never had attempted to do this work through the anterior fornix because he had never deemed it at all logical, and besides extensive mutilation of the vagina, it appeared more arduous and blind. With the present methods he does not believe the vagina can be properly sterilized, and as gynecological surgeons he asked that the alternatives be faced and that we use the sense of sight as well as of touch.

Discussion.

DR. BACHE EMMETT said that there was merit in the various procedures. The posterior vaginal incision he had only used in making examinations and liberating pus. The anterior vaginal incision had given him satisfaction and everything done was visible; he thought it could be used in a large number of cases. He preferred the abdominal route in operating for the retrodisplaced uterus with adhesions.

DR. F. H. WIGGIN believed the anterior vaginal incision had many advantages over the abdominal. He took issue with Dr. Grandin in his statement that the vagina could not be sterilized. Where there were many adhesions to deal with he preferred the abdominal route.

DR. R. A. MURRAY said gynecologists should cultivate the sense of touch, but he had never seen an operator who could say beforehand exactly what he was going to find in the abdomen. Since almost all cases of adhesions were due to tubal trouble we should be prepared to break up adhesions, and do whatever was necessary with tubes or ovaries; these could not be handled as well by the vaginal route.

DR. S. W. BANDLER saw no reason why the vaginal should not be the route of choice.

DR. A. H. GOELET felt more and more convinced of the wider range of the applicability of the abdominal section and ventral suspension and the rather limited application of the operation for shortening the round ligaments.

DR. LE ROY BROUN used the abdominal incision if the adhesions were dense; if not, he used the vaginal.

DR. P. A. HARRIS said the greatest prejudice comes from those not making themselves familiar with this work and its technique.

DR. L. J. LADINSKI said it appeared to him that those using the abdominal route suspended the uterus and those using the vaginal route shortened the round ligaments, he advocated the vaginal route.

DR. J. RIDDLE GOFFE said that the vagina could be sterilized as well as the skin. He had had ten pregnancies following his vaginal work and all had gone through gestation and parturition with no untoward results.

CHAS. F. ADAMS, *Editor*.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Stated Meeting, February 10, 1903.

The *President*, DR. EGBERT H. GRANDIN, in the Chair.

UNRUPTURED TUBAL PREGNANCY.

DR. G. H. MALLETT presented such a specimen, the diagnosis of which he had made before operation from the consistency of the tumor.

DILATATION OF THE CERVIX WITH BOSSI'S AND BROTHERS' DILATORS.

DR. A. BROTHERS gave the report of the two following cases:

1. A hydatiform mole, occurring in a woman of forty. Dilatation of the rigid cervix sufficiently to admit one finger was accomplished readily by means of his four-branched dilator, which he had successfully used for many years.
2. Case of eclampsia in a young primipara: dilated seven cm. in six minutes by means of the Bossi dilator without injury to the cervix.

MYOMECTOMY PER VAGINAM FOR SEPSIS FOLLOWING LABOR.

DR. LE ROY BROUN presented a myoma, which he had removed by morcellation through the cervix on account of the appearance of sepsis following a normal labor; the tumor which weighed three pounds was

sessile and attached near the fundus. The symptoms that had begun two days after labor immediately disappeared after removal of the tumor.

DYSTOCIA FROM ADHESIONS SUBSEQUENT TO A LAPAROTOMY FOR ECTOPIC PREGNANCY.

DR. H. N. VINEBERG related the history of a case that had been operated upon twelve months previously. The lower angle of the wound had been drained and a fistula had persisted for some time. Pregnancy, occurring three months afterward, progressed normally until the eighth month, when labor began and continued for three days without progress. The lower angle of the old incision was covered by a thin membrane through which the uterus could be seen. The cervix was pushed so far back that it could not be reached. A thin wall of tissue could be felt extending above the symphysis in a manner like the conditions found in dystocia following ventral suspension of the uterus. An unsuccessful attempt was first made under anesthesia to bring the cervix down. The membrane at the lower angle of the abdominal wound had broken during the preparations for laparotomy, through which the omentum protruded. After its replacement, one finger, introduced through the opening, broke up the adhesions between the uterus and abdominal wall, and another attempt to bring down the cervix was successful so that it could be dilated manually and a living child delivered by version *per vias naturales*. Besides illustrating the dangers from adhesions between the uterus and abdominal wall, he thought his procedure in this case suggested a method of treatment for dystocia from ventral suspension of the uterus.

PARTIAL INVERSION OF THE UTERUS. SEPSIS. VAGINAL HYSTERECTOMY.

DR. H. N. VINEBERG related the history of a patient who had been suffering from sepsis for four weeks following labor. A sloughing mass, filling the vagina, was found, during its removal, to be a partially inverted uterus to which putrid pieces of placenta were attached. The patient recovered in spite of her desperate condition.

Its insidious occurrence and the marked adherence of the placenta to the uterus were the chief points of interest. He thought the inversion had started from a deep tear of the cervix and an abnormally adherent placenta.

VERSION OR FORCEPS, WHICH?

DR. S. MARX read a paper with this title which was published in AMERICAN GYNECOLOGY, February, 1903.

Discussion.

DR. G. L. BRODHEAD considers the use of forceps to be better than version not only when the presentation, head and pelvis are normal, but also when the head is relatively too large for the pelvis. Slow and careful traction in the proper axis may often mould a head through the brim when a version would mean loss of the child. In a flat pelvis, however, version offers distinct advantages, as the forceps holds the head so near the middle of the pelvic brim that bi-parietal diameter meets the narrow conjugate; but by version the after-coming head slips to one side and allows the bi-temporal diameter to pass through the median line. In flat pelves, he thinks, external pelvic version, performed before labor, offers a distinct field of usefulness, as he had demonstrated in a case in which he had delivered a nine and a half pounds living child for a woman who had had three dead born out of four previous deliveries. He also believes that both version and forceps are done when craniotomy is indicated.

DR. R. A. MURRAY agreed that in a flat pelvis version was to be preferred. He thinks failure in version was often due to undue haste in extraction. The general tendency of obstetricians was first to try forceps but he thought version should be elective.

DR. MALCOM MC LEAN stated that he did not believe forceps should ever be used above the brim if a version can be done. He thought version dangerous if performed after failure to deliver with the forceps. Failure in elective version has been due to hasty delivery. In forty-one consecutive cases he had lost only one child.

DR. G. T. HARRISON objected to the title of the paper because, if version is applicable, forceps is contraindicated, and if forceps is indicated the time for version has passed. If the disproportion between the head and pelvis is not so great, the question is between prophylactic version and expectancy. He himself preferred version, but, assuming uterine contractions to be strong and that reliance can be placed upon the abdominal muscles, expectancy may be tried until the head becomes fixed. Forceps may then be tried, and if unsuccessful, he would elect between perforation and symphysiotomy.

DR. F. A. DORMAN favors the tentative application of forceps, except in flat pelvis, because so many children are lost in version from prolapse or entanglements of the cord about the extremities.

INTRAVENOUS INFUSION OF FORMALIN SOLUTION FOR PUERPERAL SEPSIS.

Discussion.

DR. STONE, of Washington, D.C., spoke of the importance of the discovery of such a therapeutic procedure, provided further experiments upon animals and human beings should prove its value. He would ask if a 1-5000 solution of formalin will do outside the body what Dr. Barrows says it will apparently do if introduced into the circulating blood; also, if the coagulation of albumen which occurs from its use, will act longer than twenty-four hours in either the human or animal circulation. He had proven the value of the use of saline infusion in one case, in which the urine had become suppressed.

DR. OTTO G. T. KILIANI referred to the impossibility of finding bacteria in the blood at all times, and hence the uncertainty of attempting to destroy them by introducing antiseptics into the blood. The chemistry of the toxins was of such an uncertain nature that it seemed undesirable to attempt to destroy them by formalin of the strength of 1-5000.

DR. A. PALMER DUDLEY gave a brief résumé of his experience with its use in seven cases of septicemia, from which he concluded that it was of value.

DR. S. MARX said that he had not used it; he thought a critical analysis of some of the cases in which it had apparently been successful would prove to be examples of sapremia. He would call attention to the reports of two or three cases in which cyanosis had followed the infusion. He had obtained the same results with all kinds of treatment. He had seen a case of pyemia recover after the use of the antistreptococcus serum. He considered the administration of large doses of alcohol to be especially efficacious.

DR. H. N. VINEBERG also referred to the uncertainty of finding the bacteria in the blood and thereby using that method as a criterion for diagnosis. He related the history of a case of mixed tubercular and streptococcus infection from a suppurating knee joint in which two infusions, one of formalin and one of salt had been followed by practically the same temporary improvement. After the formalin there was cyanosis and a fall in the temperature of one degree more than after the saline infusion.

DR. W. R. PRYOR called attention to the importance of accurate diagnosis in estimating the value of any new therapeutic procedure. He would call no case one of puerperal sepsis unless pathogenic bacteria had been demonstrated to be present in cultures made from the interior of the uterus. The presence or absence of bacteria in the blood was not a

safe index as they were present in the general circulation at too irregular and transitory intervals. As an illustration of the results that had been obtained with antistreptococcus serum the mortality was found to be 33 per cent. when all cases were excluded in which the bacteriologic test of the interior of the uterus had been negative; but under its use in all cases judged empirically to be septic the mortality was only 15 per cent. He personally was opposed to the use of antiseptics in such a way in these cases.

DR. RALPH WALDO gave the history of a case of puerperal sepsis in which formalin infusions were apparently of temporary benefit, but did not prevent a fatal termination.

DR. G. L. BRODHEAD reported a case of puerperal pyemia occurring in his service at the Post-Graduate Hospital, in which temporary improvement apparently followed the formalin infusion but did not materially alter the course of the disease. He thought the experiment bore out the following general conclusion of Dr. Fortescue Brickdale from experiments upon animals: "Generally then, it may be said that, at present, there is no experimental evidence which would warrant the assumption that the course of septicemia in animals can be influenced favorably by the intravenous injection of antiseptic substances and that the only result to be obtained by pressing such a treatment beyond the maximum non-toxic dose is to hasten the death of the animal."

DR. C. C. BARROWS, after expressing his deprecation of the newspaper publications of his observations, gave a brief résumé of his experiences with the use of formalin. His clinical successes in the application of this method so far had exceeded his expectations, but he preferred to wait until he had personally treated a larger number of cases before drawing definite conclusions and before giving a full report of experiments which were being made at Cornell to determine the influence of the various solutions in various strengths on bacteria in different mediums outside of the body.

WILLIAM S. STONE, *Editor.*

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF
PHILADELPHIA.

STATED MEETING, MARCH 5, 1903.

The *President*, DR. JOHN M. FISHER, in the Chair.A CASE OF POST-OPERATIVE TETANUS WITH ESPECIAL REFER-
ENCE TO THE FOCUS OF INFECTION.

Dr. L. J. HAMMOND reported the case of a farmer's daughter, 22 years of age, whose duties in addition to household work included milking cows, feeding pigs and attending to chickens. Previous to her arrival in Philadelphia she had suffered from an attack of (gonorrheal?) peritonitis. Three days after her arrival in this city she complained of toothache, attended by swelling in the left cheek, due to eleven carious teeth. This attack terminated in an alveolar abscess, which was incised and cleansed of a quantity of pus. Two days subsequent to the healing of this abscess cavity, an abdominal section was done for a bilateral pyosalpinx, ovarian abscess on one side and a multiple cystic ovary upon the opposite side. The abscess sacs were removed without rupture. The patient progressed very well until the morning of the sixth day, when she complained of a strange feeling about the eyes. Four hours subsequently she complained of an increased intensity of this feeling with stiffness of the jaws. Dr. Hammond saw her within an hour after the stiffness of the jaws was noted, and found the patient presenting a risus sardonicus. The abdominal incision was examined and found perfectly united without irritation. Trismus grew rapidly worse and within five hours after he saw her it was impossible to separate the jaws. Morphia, eserine, bromides, chloral and the tetanus antitoxin were all employed. Owing to the tightly closed jaws a culture could not be obtained from the teeth cavities, hence a positive bacteriologic proof of tetanus could not be obtained. As the period of incubation of tetanus is nine to twenty-one days, the germ could not have been introduced at the time of operation. The patient died twenty-seven hours after the first symptoms were observed.

Discussion.

DR. JOSEPH SAILER (*by invitation*), was very much impressed with the fact that the chronic cases of tetanus always recover, whereas none of the acute cases recover. He saw the case with Dr. Hammond, who

had previously given a million units of the antitoxic serum, and felt that little more could be done. The fact that this patient's symptoms began in the eyes and extended to the face led him to suspect some other focus of infection than the abdominal wound, and it seems probable that the infection was in the jaw. Cultures would not have been of much value. He detailed the bacteriology of tetanus, especial attention being called to the difficulty experienced in killing the spores of the tetanus bacillus, which can be boiled for twenty-four hours without being destroyed. It is surprising to find how frequently patients injected with gelatin for checking hemorrhage have died from tetanus.

DR. FRANK C. HAMMOND referred to two cases of tetanus following aseptic celiotomy, reported by Coe in 1901. In one instance, on the twenty-fourth day subsequent to operation the patient developed tetanus, death occurring twelve days following; in the other case, the initial symptoms developed on the ninth day, death occurring two days later. In both of these cases an early diagnosis of hysteria was made, which was confirmed by a consultant; the diagnosis of tetanus not being made until trismus developed. Coe's attention was subsequently called to the fact that the water then being supplied to New York contained large quantities of the tetanus bacilli. The water used in his operations had been boiled for an hour.

DR. H. D. BEYEA referred to several cases in which the source of infection was attributed to the water used at the time of operating. Aside from catgut it is practically the only source of infection in abdominal technique.

DR. B. C. HIRST referred to a few cases of tetanus which occurred in the Maternity Hospital of the University of Pennsylvania, due to the promiscuous intra-uterine douching of a number of patients after labor, by one of the residents. The tetanus bacillus was found in the water supply. Animals injected with the bacilli (obtained from the water) died either of malignant edema or tetanus. He had seen three cases of tetanus in different localities at different times, in which the consultant made the diagnosis of hysteria.

DR. L. J. HAMMOND (*closing*). In order to prevent further spread of the disease in the hospital where this patient was operated upon, the entire institution was cleansed with 1-500 bichloride solution. Two tanks of oxygen were liberated in each room. No subsequent trouble occurred.

BIRTH PALSIES.

DR. M. H. BOCHROCH (*by invitation*) stated that the obstetrician does not always take into consideration the accidents to the child which

so frequently result in serious and permanent palsies. These injuries frequently do not receive attention until seen late by a neurologist, whose function is limited to making the diagnosis of a permanent and hopeless lesion. In brain lesions such as hemiplegias, microcephaly, porencephaly and hydrocephalus, forceps as a rule are used too late rather than too early; prolonged pressure, such as occurs in primiparas, is more often the cause of this deplorable state than the improper use of the forceps. In cases of cerebral hemiplegia or diplegia the most that can be accomplished is a tedious and only partially successful attempt at education, and some training in the use of the paralyzed limbs. It would seem that in every child in whom at birth there are present symptoms of asphyxiation following dystochia and in whom there had been prolonged pressure and constriction of the head, it would be a justifiable procedure rapidly to make an opening of moderate size upon either side in the parietal region; in so doing the effused blood would escape, or could be washed out by normal salt solution.

Erb's palsy was detailed, stress being made upon the avoidance of the various procedures which predispose to this condition. The treatment of brachial palsy resolves itself into the employment of massage and electricity. The paralyzed arm should not be allowed to hang helpless by the side, but should be supported in a sling or in a Velpeau bandage. In some of the cases nerve suturing may be indicated.

Discussion.

DR. GEORGE M. BOYD had not seen any cases of palsies as a result of forceps delivery. He considered that this condition is due to the too early interference, injudicious, or faulty use of the forceps, rather than prolonged labors.

DR. STRICKER COLES has had only one case of paralysis of the arm, due to difficulty in delivering the shoulders, over twenty minutes being required.

DR. L. J. HAMMOND considers that operation should be undertaken in all cases that do not respond to the routine medical treatment within a reasonable time; if operation is delayed until nutritive changes take place it is possible that nothing can be done.

DR. W. S. STEWART reported a case of paralysis of the arm evidently due to a maternal impression.

DR. F. C. HAMMOND quoted Stolper, who demonstrated that the roots of the brachial plexus cannot possibly be compressed by the tips of the forceps so long as the child presents by the vertex, although it may occur in face and brow presentations. Dercum states that he has

never seen a case of birth palsy cerebral in origin occur in a multiparous woman. From this standpoint a certain amount of prophylaxis may be exercised in the proper application of the forceps just as soon as the fetal head fails to recede between pains.

DR. E. P. BERNARDY believes that many brain lesions, especially those of late appearance, are caused by the injuries produced by misapplied forceps. In an experience of 5,000 labors he does not recall one case injured by prolonged labor, where forceps were not applied.

DR. M. H. BOCHROCH (*closing*), emphasized that forceps are not used soon enough and prolonged pressure permitted, especially in primiparas. Probably this is the most frequent cause of the palsies encountered.

CHARLES P. NOBLE, *Editor*.

INDEX OF CURRENT LITERATURE.

J. WESLEY BOVÉE, M.D.

CHARLES S. WHITE, M.D.

GEORGE K. BAIER, M.D.

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3. American Journal of the Medical Sciences. Philadelphia.
4. American Journal of Obstetrics. New York.
5. American Medical Compend. Toledo, O.
6. American Medicine. Philadelphia.
7. American Practitioner and News. Louisville.
8. American Surgery and Gynecology. St. Louis.
9. Annales de Chirurgie et d'Orthopédie. Paris.
10. Annales de Gynécologie et d'Obstétrique. Paris.
11. Annals of Gynecology and Pediatrics. Boston.
12. Annals of Surgery. Philadelphia.
13. Archiv für Gynäkologie. Berlin.
14. Archiv für Klinische Chirurgie. Berlin.
15. Archives de Neurologie. Paris.
16. Archives Provinciales de Chirurgie. Paris.
17. Archivio di Ostetricia e Ginecologia. Napoli.
18. Archivos de Ginecología, Ostetricia y Pediatría. Barcelona.
19. Atlanta Journal-Record of Medicine.
20. Australasian Medical Gazette. Sydney.
21. Beiträge Zur Geburtshilfe und Gynäkologie. Leipzig.
22. Beiträge Zur Klinischen Chirurgie. Tübingen.
23. Berliner Klinische Wochenschrift.
24. Boston Medical and Surgical Journal.
25. Botkin's Gazette. St. Petersburg.
26. Brazil Medico. Rio De Janeiro.
27. Bristol Medico-Chirurgical Journal.
28. British Gynecological Journal. London.
29. British Medical Journal. London.
30. Brooklyn Medical Journal.
31. Buffalo Medical Journal.
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34. Bulletin of the Johns Hopkins Hospital. Baltimore.
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47. Centralblatt für Gynækologie. Leipzig.
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63. Dominion Medical Monthly. Toronto.
64. Dublin Journal of the Medical Sciences.
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66. L'Egypte Medicale. Alexandria.
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ABSTRACTS.

A. D. CHAFFEE, M.D., T. W. CLEAVELAND, M.D., REUBEN CRONSON,
M.D. GEORGE GELLHORN, M.D., AND ADAM SCHAUF, M.D.

OBSTETRICS.

Rigor Mortis on Intrauterine and Immature Fetuses.

L. SEITZ (*Sammlung klinischer Vorträge*, No. 343) says that rigor mortis is regarded as an unquestionable evidence of the existence of death. According to the almost universally accepted theory of Brücke, later substantiated by the experiments of Kühne, the cause of rigor mortis is the coagulation of muscle albumen, which produces a general contraction of the muscles.

Nysten and Bernstein regard the muscular rigidity as a final contraction of the dying muscle due to the excretion of myosine. Besides the coagulation of the myosine another chemical process, begins with the appearance of rigidity, namely, the formation of lactic acid (Landois), while the production of phosphoric acid plays an important part with an equal quantity of carbonic acid (L. Hermann). This accounts for the acid reaction of a cross section of a muscle in rigor mortis as Du Bois-Reymond has demonstrated. The reaction of a cross section of a fresh and resting muscle is neutral or slightly alkaline, while the reaction of a rigid and acting muscle is acid and due to the presence of lactic and carbonic acid. This explains the rapid appearance of rigor mortis in fatal cases of spasms.

The time of appearance and the strength of the muscular rigidity depends upon the development and power of the muscle.

Ed. Hoffman claims that in acute parenchymatous degeneration of the muscles, in sepsis, phosphorus and mushroom poisoning rigor mortis may be entirely absent or less pronounced and remains for a shorter time. The same is true in individuals who die after a long or severe illness, marasmus, hydrops, in infectious diseases and senility. It is claimed likewise that in the new-born rigor mortis is weaker and continues for a shorter time.

The generally accepted view that rigor mortis does not occur in fetuses prior to the seventh month is undoubtedly wrong.

The writer cites several cases in which he had opportunity of observing rigor mortis in fetuses intrauterine and after Cesarean section and prior to the seventh month.

A. S.

Preliminary Remarks Regarding Scopolamin-morphin Injections in Obstetric Practice.

V. STEINBÜCHEL (*Centralblatt für Gynäkologie*, 1902, No. 48) says a medicament which fulfils the following conditions is certainly a useful remedy:

1. Relieves pains without
2. Unfavorably influencing their character.
3. If necessary to use an anesthetic later it does not act unfavorably or increase danger.
4. It must be harmless, otherwise it would not be justifiable to use it to relieve pain in normal physiological labor.
5. It must not act unfavorably upon the child.
6. It must not produce atony of the uterus after expulsion of the ovum as so frequently follows the use of chloroform.

These properties the combination of scopolamin and morphin seems to possess.

The dose is a hypodermic syringe full of a solution of scopolamin hydrobromic (Merck) 0.0003 and morphin muriate 0.01 injected subcutaneously.

It is recommended to inject $\frac{1}{2}$ syringe full and two hours later the remainder.

This careful administration has never been followed by any unpleasant symptoms, while the relief from pain has been very marked. The action of the drugs is felt about half hour after the injection, reaching its maximum effect in about $1\frac{1}{2}$ hours (Blos). This is the time, therefore, when it is advisable to perform the necessary operations, such as suturing the perineum, dilating the cervix, curettage for retained conception (abortion) products, or even some of the greater operations.

Should the patient still react too forcibly, chloroform or ether may be administered with impunity, and it is surprising how little will suffice.

A. S.

Primiparas Under 16 Years of Age.

A. PALOTAI (*Centralblatt für Gynäkologie*, 1902, No. 52) presents the results of a careful investigation of the birth occurring in the first division of the University clinic at Budapest of primiparas under 16 years of age.

In 17,169 births there were 25 primiparas who at the time of delivery

were under 16 years of age. Of these 25, seven were 14 years of age, and 18 were 15 years. Two, 14 years of age, had not menstruated, which would seem to imply that the first mature ovum had become impregnated. Of the others, menstruation had occurred from one to five times, and in only one, 15 years of age, had menstruation been normal for one year.

The rule is that the course of pregnancy is normal, abortion seldom occurring, whereas premature labor happens more frequently. Delivery in consequence of its short duration is usually easy. The necessity of operative interference should not cause apprehension. Prognosis with reference to injury to the soft parts is very good. The puerperium does not vary from the normal, while the prognosis for the child is likewise good.

A. S.

The Technic and Application of Vaginal Cesarean Section.

E. BUMM (*Centralblatt für Gynäkologie*, 1902, No. 52) gives the following technic for vaginal Cesarean section. For exposing the field of operation large flat retractors are used, then a Collins hook is placed upon each side of the cervix.

A sagittal incision 5 to 7 cm. in length is made through the mucous membrane of the anterior cervico-vaginal vault up to the cervical lip. The loose connective tissue between the bladder and cervix is now cut by means of scissors, and the bladder pushed back with a gauze sponge up to the site of the internal os.

The sagittal incision is now continued through the anterior cervical wall up to the internal os. The upper edges of the wound are now grasped by two Collins forceps and traction made upon them just as in morcellment and vaginal myomotomy. The bladder is separated still farther and the exposed uterine wall is incised. By careful traction it may be possible to make the incision from 8 to 12 cm. in length without opening the peritoneal cavity. This incision will give ample room for the introduction of a hand, and the extraction of even mature fetuses. The incision is closed by interrupted catgut sutures, a separate suture for the mucosa completing the operation. A report of 13 cases operated upon follows.

Indications for the operation are carcinoma of cervix, eclampsia and placenta previa.

A. S.

Regarding Vaginal Cesarean Section Complicated with Carcinoma of the Cervix and Pregnancy.

F. WEBER (*Centralblatt für Gynäkologie*, 1902, No. 48) says that since the method of procedure in advanced pregnancy, complicated with cancer of the cervix, has not been definitely settled, each case bearing upon this question is worth reporting.

Patient 39 yrs.; X-para, pregnant almost at term giving history of irregular bloody vaginal discharge.

The vaginal examination disclosed a large carcinoma involving the whole posterior lip of the cervix and reaching to the vaginal vault. A few days later the following operation was performed. The cervix was drawn down, and the cancerous mass curetted, producing a severe hemorrhage which the cautery would not control, and compression with gauze tampons was necessary. A circular incision was then made around the cervix, and the bladder separated from the uterus anteriorly. Severe hemorrhage followed which compression controlled. Next, the posterior cervical lip was dissected off. A silk ligature was then applied to each broad ligament.

The uterus was now drawn down and an incision made into its anterior wall up to the internal os, while a similar incision was made into the posterior wall of the cervix.

The membranes were then ruptured, the hand introduced and by version a slightly asphyxiated fetus was extracted, which was soon revived. The fetus weighed 2300 gr.

The uterus was then further incised half way to the fundus, according to Doyen, which permitted it to be drawn easily to the vulva. Upon each broad ligament four ligatures were then applied and the uterus removed. Altogether, ten ligatures were applied. The patient made a good recovery. The child died four weeks later from acute gastritis. The writer has found but 13 other cases reported of advanced pregnancy complicated with cancer of cervix in which vaginal Cesarean section and hysterectomy were performed.

Of these 14 cases, only two proved fatal, of heart failure.

Of these children, five died, being born prematurely; the other nine which were at or near term all survived.

Dührssen's vaginal Cesarean section as practised in the above case is preferable to the procedure of Freund, Zweifel, Fehling, or Ols-hausen because the abdominal cavity is opened only in its lower segment and the intestines are not exposed, consequently, the shock is not

very great; furthermore, as soon as the cervix is dissected free it may be excised and infection thus avoided.

The operation is contraindicated in contracted pelvis with rigidity of the soft parts.

Hemorrhage from the large veins is almost always excessive and should be controlled by compression rather than by attempts at ligating individual vessels.

A. S.

*Vaginal Cesarean Section in the Eighth Month of Pregnancy (Twins)
Complicated with Carcinoma of the Cervix.*

KALLMORGEN (*Centralblatt für Gynäkologie*, 1902, No. 48) reports a case with the following history:

Patient, 32 years; V-para; married 11 years. Pregnant four months, but had hemorrhage at irregular intervals since. Upon examination the uterus appeared very large and gave the suspicion of twins. Vaginal examination revealed a typical carcinoma the size of an apple upon the anterior lip of the cervix.

In the seventh month of pregnancy she was operated upon *per vaginam*. The tumor was curetted and the base cauterized with Paquelin's cautery. An incision was then made into the anterior cervical wall and twins delivered; this was followed by a vaginal hysterectomy. Patient recovered without complications. The twins lived a short time only; one nine hours, the other 14 days. In selecting the above operation the following procedures were considered:

1. Dilatation of the cervix with colpeurynter or metallic dilator, emptying of uterus, followed by total extirpation *per vaginam*.

2. Abdominal Cesarean section and hysterectomy.

3. Abdominal Cesarean section and vaginal hysterectomy.

4. Vaginal Cesarean section and vaginal hysterectomy.

The last procedure was selected as the one likely to produce the least shock, hemorrhage and infection. The uterine arteries were tied after the fetuses were delivered.

A. S.

A Case of Hematocele Following Laparotomy Without Tubal Pregnancy.

A. E. NEUMANN (*Centralblatt für Gynäkologie*, 1902, No. 51) reports a case in which a laparotomy was performed for cystic degeneration of the ovary and pelvic adhesions. The tube and ovary were removed upon the left side, the adhesions relieved upon the right side.

Although there was some slight oozing from the torn adhesions the abdomen was closed. The patient showed evidences of internal hemorrhages after the operation, and three days later a doughy mass could be felt in Douglas' cul-de-sac and symptoms of pressure and discomfort were present. On the tenth day after operation Douglas' pouch was opened *per vaginam*, which permitted the escape of a tarry fluid. A gauze drain was introduced. All the unpleasant symptoms subsided at once and patient made a good recovery. A. S.

A Case of Primary Carcinoma of the Tube.

M. GRAEFE (*Centralblatt für Gynäkologie*, 1902, No. 51) reports a case in which the diagnosis of hydrosalpinx was made and an operation advised. The patient refusing, she was treated with hydrastis. She did not return until 2½ years later, when she submitted to an operation. During this time the tumor apparently had not increased in size. A laparotomy was performed and the tube removed.

An incision into the tube permitted the escape of a clear serous fluid and revealed a papillary growth the size of a chestnut in the ampullary region. Microscopic examination disclosed typical cancer cells. The patient made a good recovery and now, eight months after operation, enjoys perfect health.

The interesting feature of this case is the slow growth of the malignant tumor and the lack of metastatic evidences. A. S.

The Technique of Filling the Colpeurynter.

A. KURRER (*Centralbl. f. Gynäk.*, 1903, No. 7) describes an attachment to the colpeurynter which should prove both useful and beneficial. He connects a fountain syringe to the tube of the colpeurynter, a stop-cock being interposed, which operates automatically; as the cervix dilates the water flows into the colpeurynter, keeping it distended at the same time exerting some pressure. If desired, traction may be applied at the same time, which, when the cervix has become completely dilated, will deliver the colpeurynter.

This arrangement obviates the necessity of repeatedly extracting, filling, and introducing the colpeurynter, with consequently less danger of infection. A. S.

AMERICAN GYNECOLOGY

VOL. II.

MAY, 1903.

No. 5.

PRESIDENTIAL ADDRESS—THE SURGICAL TREATMENT OF EARLY DIAGNOSED CANCER OF THE UTERUS, MORE ESPECIALLY BY HYSTERECTOMY.*

BY J. E. JANVRIN, M.D.,
New York City.

Mr. Chairman and Fellows of the American Gynecological Society:

My sincere thanks are due you for the great honor which you have conferred upon me in choosing me as your President. There is no greater honor to which I could aspire and certainly there is no greater one which I could ever hope to win. The position carries with it many serious obligations, not the least of which is the annual address which each President is expected to deliver.

Before entering upon the short paper which it is my purpose to offer, it behooves me to pay a fitting tribute to the memory of three of our former members, all eminent in our specialty and honored in our own country and abroad.

Dr. John Byrne, one of the Founders and who, up to the date of his death, was an active member of our Society and a regular attendant of our meetings, a man beloved by all who knew him, honored by membership in many similar societies both at home and in foreign countries, died at Montreux, Switzerland, on October 1st, 1902. As in life he held a warm place in our hearts, so when parted from us by the veil which hides the hereafter from our vision, his memory will continue with us, guarded and cherished with pride and affection.

In the death of Dr. T. Gaillard Thomas, also one of the Founders, and an active Fellow of the Society up to 1893, and an Honorary Fellow since that date, obstetrics and gynecology have lost one of their most conspicuous and shining lights. In many respects a pioneer, in

*Delivered at the twenty-eighth annual meeting of the American Gynecological Society at Washington, D. C., May 13, 1903.

every respect abreast of all that has made our specialty grand and heroic, a bold and successful operator and a man of indomitable energy while his health was such as to permit his active engagement in professional duties, his work in the lecture room, in the operating room and in medical literature will live long. Especially is this true as regards his lectures, for many years so populer and instructive, which have been a guide to hundreds of young practitioners in their early obstetric and gynecologic work.

Of Dr. Edward W. Jenks, also one of the Founders of our Society, who has so recently been called from our midst, for he was present with us at our last meeting a year ago and contributed an excellent paper on "The Medical Side of Gynecology," it can truly be said that while his genial and gracious presence always elicited the hearty esteem and most kindly feeling from us all, his rare attainments in medical and surgical literature and his long and active life devoted to the advancement of our art will always mark him as one whose whole soul was in his work and whose example will last as an incentive to us who still work on.

These honored men have only gone beyond our sight. The memory of their lives and achievements still lives as a guide and stimulus to us.

"Take them, O great Eternity!
Our little life is but a gust
That bends the branches of Thy tree,
And trails its blossoms in the dust!"

During the twenty-eight years of the existence of this Society the gentlemen who have held the position of presiding officer have furnished you with many and varied addresses and have covered the ground so thoroughly as to the status of gynecology, its history, achievements, successes and future hopes and expectations, that there is practically nothing left for me to offer in either one of the lines mentioned.

It has therefore seemed best to me to call your attention for a short time to a matter of vital importance to us as gynecologists, although so much has been written upon it of late that it has become somewhat threadbare, and to give to you my own experience, as well as some statistics from others, and my deductions drawn therefrom. Two notable addresses have in times past been delivered upon this subject by Presidents of this organization. One by our lamented ex-President, Dr. John Byrne, in 1892, and one by our distinguished Fellow, Dr. Joseph Taber Johnson, in 1899. The subject to which your attention is so-

licited is "The Surgical Treatment of Early Diagnosed Cancer of the Uterus, more Especially by Hysterectomy."

During the past fifteen years the writer has on many occasions read papers before various obstetric or gynecologic societies upon vaginal hysterectomy for cancer, its appropriate use, and its abuse also, its limitations and its hoped-for and actual results; but these papers have been rather short and in no one of them has the field of his own experience been covered by anything like an attempt to give a full *résumé* of his actual work and observations. The work of other operators has been published abroad and at home in the various medical and surgical journals, and, to a small extent, in the few books published during the past few years devoted to the treatment of uterine cancer. The experience of different operators has been so diversified and to a great extent so unsatisfactory that one is often led to think that perhaps after all it might be best *not* to attempt any radical measures in the treatment of this disease, but when one stops to think awhile and carefully looks over the literature he will soon, in my opinion, realize this one undisputed fact, *viz.*, that in the majority of hysterectomies for cancer of the uterus the disease has passed far beyond its primary and local stage and it is questionable whether hysterectomy in any form ought to have been resorted to with much hope of really arresting the disease and curing the patient. For that very reason hysterectomy for cancer has become, to say the least, unpopular, and pretty justly so I believe, for no distinction, or very slight if any, having been made in the selection of cases, and the ultimate results being for the most part unsatisfactory, the *operation* has had to bear the onus of its poor terminations. It will be my endeavor in this address, first, to specify and point out the conditions in which vaginal or abdominal hysterectomy holds out *good* hopes for a radical cure; second, to point out the conditions in which the operation holds out *some* hope of a radical cure, and certainly a prolongation of life with a more comfortable existence than could possibly be hoped for if hysterectomy were not resorted to, and, third, to describe the conditions in which, in my opinion, the operation should not be attempted, that is, with any hope of a cure. I would say here that in this third class in which no radical operation can hold out any possible hope of a cure, hysterectomy should not be charged up with the great number of failures which of necessity must ensue. The conditions being such as to contraindicate the operation, it is not doing justice to the operation itself to load it down with an immense number of failures which should have been foreseen before hysterectomy was done, and so the operation in such cases brought into

disrepute. In my early operations, principally vaginal, like every one else particularly interested in this subject, I made many operations, with the hope of curing the patient, which a more extended experience soon showed me should have been done simply with the idea of removing an extremely offensive organ, checking hemorrhage and the offensive discharge, and so prolonging life and making it more endurable. During the past fifteen years more care has been exercised in the selection of cases—fortunately more cases have been diagnosed while the disease was local and before any systemic infection had occurred—and, as a perfectly logical deduction, the percentage of ultimate cures has been much more satisfactory. Even at the present date, after years of study and observation both by the pathologist and the surgeon, we are practically at sea as to the etiology, pathology, and the most appropriate means of combating this disease in its many and varied manifestations, but there are a few points upon which we all agree and one is that for a certain length of time all, or nearly all, so-called cancers are simply local affairs, and, if so situated that the organ or tissue in which they have developed can be removed with a fair amount of healthy surrounding tissue, the ultimate result in a large majority of these cases can be looked forward to with much hope on the part of the surgeon and great joy on the part of the patient.

I shall take up first the development of cancer in and from the cervix. The well-known predisposition of the cervix uteri to the development of epithelioma has been referred chiefly to the presence of embryonic cells which remain as such, to a certain extent during life; and in the light of our present knowledge as to the scope which local irritation plays in the development of cancer in all its varieties, it is not at all strange that it should show itself, as a prime factor, in the development of epithelioma of the cervical tissue. Pozzi divides epithelioma of the cervix (and vagina) into four classes during the initiatory stage of its development.

1. Papillary or cauliflower.
2. Nodular or parenchymatous.
3. Cancer of the cavity of the cervix (boring or eating cancer).
4. Vaginal, usually commencing in the cul-de-sac, and then extending to the cervix and adjoining tissue.

My own observations as to the extension of epithelioma *beginning* in the cervix are somewhat as follows:

1. Up and into the cervical canal.
2. Up and into the uterine body.
3. To the tissues surrounding the cervix, the parametrium especially.

4. Downward *upon* the vaginal mucosa, and after a certain time *through* the mucosa into the wall itself.

I ought here to state that an epitheliomatous, carcinomatous or adenomatous degeneration beginning in the endometrium usually for some months is purely a local affair. When the organ is not removed during the early stage of the disease the body itself soon becomes affected, but even then for a certain time the disease is confined to the uterus only.

Of the different forms of epithelioma of the cervix uteri the cylindrical variety is by far the most frequently met with, and it has a decided tendency to diffuse itself from the cervix upward into its cavity and the uterine body.

Next in frequency is the pavement variety involving for a long time only the mucous membrane of the cervix, or of the vagina, or both.

In several cases which have come under my observation it has seemed to me to have begun upon the cervix and subsequently to have been transferred to the upper portion of the vaginal mucous membrane simply by attrition and absorption. With this new focus for the extension of the disease existing it is most fortunate that the conservative resources of Nature are called into play, and a deposit of healthy, newly-formed connective tissue proliferation takes place in the vaginal wall, thus for a time separating the disease from the lymphatics of the cervix and vagina. In such cases of beginning invasion of the vagina the operation of vaginal hysterectomy gives the most hopeful outlook as to non-recurrence of the disease, *provided sufficient of the vaginal wall is removed at the operation*. We should remove at least a full inch of healthy vaginal tissue below the margin of the disease. I have had several cases of this class, all operated several years since, and they have remained free from recurrence and are perfectly well at the present date. In those cases in which the cervix alone, or the cervix *and* endometrium, and even in some in which the body itself is somewhat involved but there is no extension beyond these points, vaginal hysterectomy is a safe and promising operation.

By this I do not mean that every surgeon *must* select this operation, for if one prefers the abdominal route, possibly from a greater personal experience in that method, there are no particular reasons why it should not take the place of the vaginal method. It is simply a matter of choice to be decided by the operator.

When the disease has extended *through* the vaginal wall and the cellular tissue and lymphatics have become seriously involved, there is very little hope of removing the entire diseased tissues, unless the operation

is extended into the bladder or rectum, as the case may demand. Under these circumstances, Mikulicz has expressed himself upon this point as follows: "As long as one regarded the bladder and rectum as a *noli me tangere* just so long did extirpation of the uterus fail of desirable results; there must be no fear in attacking both rectum and bladder, for they are not organs essential to life."

Terrier also says: "We should not hesitate to operate, since extirpation of a part of the rectum or of the bladder, which may be involved, will not be incompatible with existence."

Only two years ago our fellow member, Dr. J. Wesley Bovée, presented to this Society a most thorough résumé of the operations reported up to that date of total removal of the bladder for malignant and other conditions. Of the 21 operations for malignant disease of the bladder 11 resulted fatally. The ureters were disposed of in various ways, one-third of the number (7) being turned into the vagina. Of these 7 cases 2 resulted fatally, one in twenty hours from collapse and one in nine days from peritonitis. Still this method of the disposal of the ureters is by far the most satisfactory. These 21 cases do not include the two reported by our fellow member, Dr. Matthew D. Mann, at the same meeting. In Dr. Mann's first case the operation was eminently successful, there being no return of cancer up to the date of the patient's death (five months after the operation). Her death was due to exhaustion from long-continued kidney disease, pyelitis and abscesses. Of course the time elapsing from the date of operation to date of death from pyelitis (only five months) was not sufficient to determine as to whether the cancer would re-develop, but the report of the pathologist declaring it to be a carcinoma also states that "it is likely to be very malignant, although such tumors do not generally produce metastases until very late in their development." The inference must be that it would sooner or later re-develop. In Dr. Mann's second case the disease did recur within a few months and the patient failed rapidly.

This digression from cancer originating in the uterus to that originating in the bladder will be excused and the subject taken up again under its proper head, *viz.*, in that class of cases in which the disease has invaded the bladder through the anterior vaginal wall. To return to the first division, *viz.*, those cases in which the disease is still local. If it is determined that the disease is probably still confined to the parts previously mentioned (cervix, or cervix and upper mucosa of the vagina, endometrium, or endometrium and the inner muscular structure of the body) then hysterectomy should be done at once. In a good number of such cases the supposed existence of malignancy has been previously

verified by a careful microscopic examination of curettings or small sections from the diseased point. In others this verification has been made after the removal of the uterus. In others still no microscopic examination has been made either prior or subsequent to the operation, but the general symptoms and gross appearance have been sufficient to convince me that the diagnosis was correct.

I am indebted to an article published in the *Philadelphia Medical Journal*, Nov. 9, 1901, by our fellow member, Dr. Charles P. Noble, for the following statistics as bearing upon the "ultimate results of operation for cancer of the uterus."

"Richelot gives, as a conservative estimate, 10 per cent permanent cures by vaginal hysterectomy in cases in which the uterus is mobile and the disease is sharply circumscribed."

"Winter states that at the Berlin Clinic of 300 cases of cancer of the cervix operated upon prior to 1892, 30 per cent were cured, *i.e.*, five years' exemption from return of disease, and in 30 cases of cancer of the body 53 per cent were cured."

"Olshausen at the Thirtieth Congress of the German Surgical Society, Berlin, 1901, reported that he usually employed vaginal hysterectomy and operated upon about 50 per cent of the cases that came to him and that his permanent cures, five years' limit, were 10 per cent."

"Waldstein, in commenting upon 274 cases of cancer of the uterus operated upon by Professor Schauta by vaginal hysterectomy up to January, 1899, states that at the end of six years in the favorable cases 42.9 per cent were alive, and in cases having glandular involvement at the time of operation 12.9 per cent were alive. Kaltenbach in 77 cases of cancer of the cervix, 36 were traced and of these 13.9 per cent were cured. Fritsch in 65 cases of cancer of the uterus, 11 cases were traced of which 36 per cent were cured. Leopold, in 104 cases of cancer of the uterus, 47 were traced, of which 53.2 per cent were cured."

"Pfannenstiel reports that of the cases presenting themselves at the Breslau Clinic 19.5 per cent have been operated upon by vaginal hysterectomy. At the end of five years 36.2 per cent of those traced (47 of 116 cases) were free from recurrence, which is equivalent to 15 per cent of all cases operated upon, and 7 per cent of all cases presenting themselves at the clinic." On the other hand, "Jacobs, of Brussels, is an ardent advocate of abdominal hysterectomy for cancer, on the ground that having performed 82 vaginal hysterectomies for cancer without a single death from the operation, in all of the patients recurrence took place a year after operation and that at this time not a single patient is living."

Among the German operators at the present time who prefer the abdominal route are Freund, Amann, Mackendoldt and Wertheim.

In America, Dr. J. Kellie and a few others are doing excellent and most radical work by the abdominal route. Personally I have had but little experience in this line. Since all of these very radical operations, however, are of recent date, it is impossible to give correct data as to the ultimate results as yet. Theoretically they should be much better than in vaginal hysterectomy, but the immediate mortality following the operation from shock may possibly counterbalance the other advantages of the operation.

A Few of Recent Statistics.

Dr. Noble's report of his own cases shows "32 hysterectomies for cancer, 23 cancer of the cervix and 9 of the body. Of the 32 cases 6 were living and free from recurrence at the end of five years, which is 18 per cent. There were three others living and free from recurrence at the end of three years, and two of these three being cases of cancer of the body it is very probable that they are permanently cured—in which case the percentage of ultimate cures is above 20 per cent." The following letter from Dr. E. C. Dudley, of Chicago, furnishes the data as to the results in his cases.

"My dear Dr. Janvrik—I am sorry that I cannot tell you the number of my cases of hysterectomy for carcinoma of the uterus, but I have not kept a record of them. Roughly speaking, I should say that I have probably removed the uterus for cancer more than one hundred times and that all but seven or eight of these operations have been vaginal operations and that the vaginal operations have all recovered from the operation. I have been obliged to do the combined abdominal and vaginal operation in a few cases, because the uterus was too large to be brought through the vagina. As the result of these combined operations I can at this moment recall but one death.

"In the majority of all my cases death has occurred from the return of the disease at periods varying from a few months to one or two years after the operation. I have lost track of a great many of the cases operated upon, but can think of eight or ten who still remain well several years after the operation, that is, five or ten years. In all of these cases the diagnosis has been made with absolute certainty by microscopic examination. I have never performed the radical operation of the removal of all the glands through the abdominal section, as ad-

vocated by Clarke, Cullen and others. This operation seems to me to involve an amount of danger which is out of proportion to the increased freedom from ultimate mortality. I am sorry I cannot give you more definite information.

"Yours truly,

"E. C. DUDLEY.

"Chicago, February 2, 1903."

This report of Dr. Dudley's shows at least 10 per cent of absolute cures.

The following letter from Dr. H. J. Boldt gives his statistics :

"Mr. dear Dr. Janvrin:—In reply to your inquiry I beg to report that up to January 1, 1899, I did 115 vaginal hysterectomies for cancer. Of these, six patients died from the direct result of operation; forty-four have died since from recurrence of cancer; three died from other causes than cancer. From thirty-four I could not get a report, so that it is impossible to say whether or not they have died from the disease. Twenty-eight patients, however, were living and free from recurrence at the time of my last inquiry—making a positive recovery with freedom from disease of 24 per cent.

"Hoping that the answer may be what you desire,

"I am most cordially yours,

"H. J. BOLDT.

"New York, February 3, 1903."

Dr. W. H. Baker's personal experience is as follows :

"Dear Dr. Janvrin:—I have been over the cases of hysterectomy for cancer, both in my private and charity hospitals, with the following results :

"Number of cases,	14
"Abdominal method,	0
"Vaginal method,	12
"Combined method,	2

"Results.

"Deaths immediately following operation, 3

"Cause.

"Shock,	1
"Septicemia,	2

"Recoveries with return of diseases at a later date,	7
"Recoveries and non-return of disease,	2
"Not heard from,	2

Percentage of cures, 14.28.

"As you perhaps are well aware, my success in the treatment of this terrible malady has been much greater by my method of high amputation followed by the actual cautery. Within the last three months I have heard from four of the ten cases originally reported by me in 1882, and a second report on the same series made before the American Gynecological Society in September, 1891. In these four cases where the operation was done in its entirety, there was no return of the disease in two cases after twenty-one years, in one case after twenty-two years, and in one case after twenty-four years. Three are still living and in good health, and one died of apoplexy two years ago.

"Very sincerely,

"Boston, April 4, 1903."

"W. H. BAKER.

Dr. W. R. Pryor writes me as follows :

"Dear Dr. Janvrin:—My first transperitoneal bilateral ligation of the ovarian, internal iliac and obturator arteries was on February 8, 1897, in case of carcinoma recurrent after vaginal hysterectomy. In April I did my first elective operation.

"Barbara Umiker, aged 36, operation April 28, 1897. Specimen examined by Vissman. No recurrence.

"I had no opportunity to do the operation again, except to starve inoperable growths, until May, 1899; so I have but one case for your purposes.

"However, many operations have been done since 1899, and I wish to impress upon you the fact that in not one where the disease has been limited to the uterus has recurrence taken place within one year: I think this a most important observation, as recurrence after vaginal hysterectomy occurs in about 60 per cent in the first year.

"Sincerely,

"New York, April 13, 1903."

"W. R. PRYOR.

My own statistics up to January 1, 1899, are as follows :

Abdominal and Vagino-abdominal Hysterectomies.

Twelve cases, two cured, more than eight years having elapsed. Six

recurrences. Four deaths from operation (two from shock, one from septicemia and one from uremia).

Percentage of cures, 16.6

Vaginal Hysterectomies.

Thirty-eight cases, ten permanently cured. Fifteen recurrences. Four deaths from operation. Ten lost sight of after a few months.

Percentage of cures, 26.3

Total number of cases, 50

Twelve cured,

General percentage of cures, 24

In a recent paper (Nov., 1902, *American Gynecology*) contributed by Dr. George Gellhorn of St. Louis, on "The Lymph Glands in Uterine Cancer," a very thorough and exhaustive account of the results obtained by many foreign operators and a few American operators is given. The paper deals largely with the anatomical distribution of the lymph vessels and the glands and shows conclusively that it is utterly impossible to remove *all* of the glands no matter how prolonged the operation or how skilful the operator. His conclusions are as follows: "The reader has undoubtedly noticed that so far no reference has been made in this paper to the *mortality* of the radical operation. The primary mortality plays one of the most important parts in estimating the value of any operation. The final adoption or rejection of abdominal hysterectomy, with removal of glands, will depend largely upon this point. But this operation is still too young to permit the mortality to be taken into consideration. The inequality of the primary results, obtained by various operators, seems explicable by the following facts: First, a technic which is, as yet, uncrystallized; second, personal skill which from the very fact of a limited experience has, as yet, not been fully developed. Pioneers in any of the more radical operations, as a rule, fail to secure at first as good results as they do afterward or as may be developed by their followers. Surely the appalling mortality of the first ovariectomies does not to-day militate against the life-saving value of this procedure."

"What conclusions can be made from the foregoing survey of the literature of our subject?

"The fact has been brought out that in about one-third of all cases of uterine cancer involvement of the regional glands in the pelvis takes place. This involvement as a rule occurs but very seldom in the

incipient stage of the disease, but usually when the primary cancer has more or less advanced and extended into the parametria or other adjacent structures. Recurrence after the old methods takes place in four-fifths of all cases in or near the cicatrix in the vagina, while it occurs in only one-fifth in the glands. Abdominal radical operation with removal of the pelvic glands strives to lessen the high percentage of recurrences, but, so far, has not been able to attain the desired goal. This deficiency mainly depends upon anatomical and technical difficulties in routine ablation of pelvic glands. In a large number of cases this radical procedure with its great and manifold dangers has been found to be unnecessary as there were no diseased glands anywhere within the pelvis. It must, however, be emphasized that these conclusions are not as yet definite."

In an article by Dr. W. W. Russell,* of the Johns Hopkins Hospital, there is an excellent description, accompanied by plates, showing the distribution of the lymph vessels and the glands in the female pelvis. The first group of vessels, starting from the cervix, has its first group of glands located in the parametrium *below* the broad ligament, not in it, and another group near the iliac vessels at their dividing point. The second group of vessels, going from the body and fundus, pass in two large vessels upward through the broad ligament, and have their first group of glands just below the kidneys, in front of and partly surrounding the aortic vessels. The third group of vessels originates in the horns of the uterus and passes out to the vaginal glands, anastomosing, on either side of the uterus, with the group of vessels from the cervix. This arrangement of the lymph vessels and glands, so accurately described by Dr. Russell, has to my mind a very strong clinical bearing, especially upon the selection of the operation most appropriate to each individual case.

Perhaps it would be best at this point to define the limits of disease to which, in my own experience, I have found it best to make use of *vaginal* hysterectomy, for I am convinced that if these limitations are faithfully carried out the operation is as good, and gives as good results, as any other more extensive operation would give in the same class of cases. I do not mean to say that we shall *always* follow in a beaten path and confine our work (vaginal hysterectomy) to these early diagnosed cases, but I do say that the best ultimate results will, as every one knows, follow in properly selected cases. If the disease, as far as can be determined by a careful examination, is confined to the cervix,

**American Journal of Obstetrics*, Dec., 1896.

to the mucosa of the vagina, or to the endometrium, or the endometrium and the inner half of the body, there is every reason to suppose that a vaginal hysterectomy holds out a very fair prospect of a complete cure. In this condition the uterus is perfectly movable, perfectly smooth on its peritoneal surface and not at all enlarged. There is no evidence of infiltration into the glandular structures or cellular tissue immediately surrounding the cervix, no infiltration *under* the vaginal mucosa and nothing in the general condition of the patient indicating cancerous cachexia. Under such circumstances the question to be settled is this—What method of operating promises good results?

I believe that vaginal hysterectomy, with removal of as much parametrium as is possible by this method, and also the removal of the upper half-inch or more of the vagina, will accomplish just as much as any other method and, at the same time, carries with it the least danger as an operation *per se*, for it is extremely rare that a patient succumbs to this operation. It is by following out this rule that the statistics of my own cases up to January, 1899, which I have already given, have been so favorable. During the past four years (since January, 1899) I have extended the field of operation, not with any idea of getting as good ultimate results, but simply for the purpose of removing a highly offensive local condition and in that way making a longer lease of life more comfortable to the patient and less offensive to herself and her friends. The use of the electric cautery clamp, as improved by Dr. A. J. Downes, theoretically should give the best results in this class of cases. No doubt it will do so as the technic of the operation becomes more familiar and the skill necessary for its application becomes greater in the hands of those who are making use of it. This will probably be especially true in cases in which the disease is locally somewhat advanced, too much so to be considered in its *early* stage and suitable for simple vaginal hysterectomy by the knife or the angiotribe; for the cooking of the parts will leave a better protected surface against the immediate extension of the disease and, more than that, the fact, as shown by Dr. Gellhorn in his paper, already quoted, that in a very large proportion of cases the lymphatics and glands are very slow to take up the disease will, I think, become an additional factor in impelling us to make use of this method of procedure, not only where simple vaginal hysterectomy would necessarily be unpromising, but also in many instances in which abdominal hysterectomy, with attempts to enucleate the lymphatics and glands, has been thought to be justifiable.

Winter (*Centralblatt für Chirurgie*, Jan. 25, 1902) believes that the results of an operator and the worth of his method in operations for

cancer of the uterus are best indicated by a percentage representing the 'absolute curative results.' This percentage represents the number of final cures based upon the total number of cases of uterine carcinoma, both operable and inoperable, which present themselves for treatment. According to this classification Berlin has obtained 9.5 per cent, Leopold 10.8 per cent, Kaltenbach 10 per cent, and Schauta 4.3 per cent of 'absolute curative results' in operations for carcinoma of the uterus."

It seems to me that this is not a fair way to deal with the subject, for over one-half of the cases which present themselves are *beyond* any radical operation when they are first seen, and there is no possible hope of bringing about a cure in these cases. Necessarily, if they are included in the statistics of the operation, the figures must show a percentage of less than one-half what they would have shown, and really do show, in cases suitable for operation. Even with this handicap, however, a percentage of 9.5 to 10.8, as shown in Berlin and by Leopold and Kaltenbach (according to Winter), is a magnificent tribute to the operation.

In the early part of this paper reference was made to the fact that the disease beginning in the cervix not infrequently invades the posterior wall of the bladder. My own observation in such cases is this—that by the time this condition obtains there has also occurred such an involvement of the other surrounding tissues that any operation for the extirpation of the actually diseased parts must necessarily be so extensive and entail such a shock that a quickly fatal result would be pretty sure to ensue. Even if the patient did survive the operation there is scarcely any hope whatever that a radical cure could follow, for I believe it utterly impossible under such circumstances to remove all of the local infiltrations. In fact, I think this is at the present time the consensus of opinion among those who have had a fair experience in the surgical treatment of cancer of the uterus.

In presenting this paper I am aware that the subject has been only partially covered, but my only object has been to so present it as to give (1) the conditions under which hysterectomy should *always* be done for cancer of the uterus, leaving it a matter of choice to each individual operator as to whether he selects the vaginal or the abdominal or the combined vagino-abdominal route; and at the same time to fortify this position with sufficient statistics, at home and abroad, to make the position tenable, and to impress upon the profession at large the absolute necessity of recognizing the early symptoms, and then seeking the advice and assistance of some surgeon who has had a good amount of experience in these cases, so that the hysterectomy can be done when

it ought to be done. (2) To describe another class of cases in which any operation, no matter how radical, will in a large majority of cases fail to give permanent relief; but, at the same time, to state my entire approbation of it, in the hands of expert operators. For it is only by continuous work and the accumulation of the statistics in these major operations at the hands of master operators that we can finally come to a definite understanding as to what we can accomplish and what we cannot accomplish in the surgical treatment of cancer of the uterus.

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ECTOPIC GESTATION. ETIOLOGY—SYMPTOMS—DIAGNOSIS—TREATMENT.

BY J. H. STEALY, M.D.,
Freeport, Ill.

My object in presenting these divisions of this highly important and interesting subject, and, as we shall see, not infrequent condition, is not to go into the depths of its technicalities, nor to engage in a profitless discussion of those questions not of immediate practical value, but merely to touch upon the subject at those points of most interest to those who, while not engaged in a line of work bringing them in frequent contact with such cases, yet who at any moment may be face to face with one of the most serious, alarming, and fatal anomalies, and one requiring the keenest diagnostic sight, the most deliberate judgment and the most energetic action, of any of the emergencies which we, as physicians, are called upon to meet. I therefore desire only to lay particular stress upon those facts and data as will serve the most readily in a practical manner in familiarizing ourselves with a trouble which has, as shown by the enormous increase of cases reported over those of a few years ago, too long gone either unrecognized or, recognized, has been allowed to go on to its almost invariably fatal termination, because not considered within the province of curable diseases.

Formerly considered to be a very rare condition, the trend of modern thought is toward the opinion of an almost constant relation between ectopic gestation and pelvic hematocele. And most of the recent writers on the subject consider that the large majority of these local blood extravasations have their origin in the tubal implantation of an impregnated ovum, some indeed even going to the extent of declaring it to be invariably an ectopic pregnancy, which in my mind, goes a little too far. E. C. Dudley² who has had a wide experience in these cases, and who has carefully studied the matter, declares that most cases of pelvic hematocele are ectopic gestations, and states that Formad, in 3,500 general autopsies, found 35 ectopics, or 1 per cent., which certainly means a very large figure. But there is a marked discrepancy between the post-mortem figures and the clinical findings, as Thomas¹³ quotes Bandl as stating that out of 60,000 gynecological cases in the clinics of Carl Braun and Späth of Vienna, in seven years, 5 only were extrauterine pregnancy; Löw¹⁰ gives 1 out of 400,000 to 500,000 cases;

Arneth, 1 in 3,540 cases; Winckel, 13 in 20,000 cases, and Bandl, 3 out of 60,000 cases. Joseph Price¹⁰ noted 83 out of 8,000 labors and Fasola³ observed 5 cases in 1,565 multiparas who had been sterile for some time. In my own records, I have noted 10 undoubted instances out of a general series of 5,000 gynecologic and obstetric cases. So that in view of this wide variation of data, we are again reminded of the worthlessness of statistics culled from all sources and all fields of practice.

I believe, however, that the trouble lies chiefly with the different views on the relation of ectopic pregnancy to pelvic hematocoele. If most cases of pelvic blood extravasations are to be considered the effects of tubal pregnancy, then indeed, the cases will be found very numerous. For my own part I can not substantiate this theory, as I have examined numerous cases most carefully, microscopically, and I have not been able to find, in a large number of them, any evidence of generative efforts. And we must consider that, in a portion of the body, so well vascularized, and subject to monthly congestions, as well as to the distortions of pregnancy, we must expect occasionally some small blood vessels will prove insufficient for the stress, and bursting, particularly if lying near the tube, will produce an exact simulation of a condition by many considered to be only possible in an ectopic gestation. So that I must repeat, the only right that we have to call a pelvic hematocoele a result of an extrauterine pregnancy, is by the absolute identification of decidual cells or chorion villi, or the presence of a fetus.

It is quite remarkable that in a subject that has excited such a vast amount of notice and one which has been so thoroughly studied by a large number of able men, there should as yet remain so much of doubt as to its causation. And were it not that I consider the prophylactic care of these cases of extreme importance, I should hastily pass over this portion of the subject. In a disappointingly large number of women, it is impossible to get any suggestive history that might help in solving the problem of its etiology. And in the consideration of this question, I shall assume as facts, *a priori*, that: *a.* Impregnation normally occurs in the fimbriæ of the tubes as shown by Strassman¹², Mandl, Hofmeier, Heusen and others. *b.* The ciliary currents are downward from the fimbriæ to the cervix uteri as stated by Kelly⁴. *c.* The denudation of the epithelium of the uterus or the tubes is not necessary to an implantation of an ovum (Dudley²).

The more the subject is reviewed the more evident is the fact that we can lay to the door of no one cause, the fault of this condition. Broadly stated, any condition which prevents the egress of the impregnated ovum from the tube, absolutely, or delays its passage until

by its rapid growth it has become too large and heavy to be moved by the action of the cilia and the peristalsis of the tube, is a condition favoring tubal pregnancy. These conditions may be extrinsic or intrinsic, acquired or inherited. Of the extrinsic causes, peritoneal bands and adhesions by contraction, narrowing the lumen of the tube, or distorting its shape, undoubtedly are at times a causal factor. Tumors from without the tube and absolute atresia by torsion or constriction of one tube, with external migration of the spermatazoa as noted in 5 out of 30 cases by Williams¹⁷ may act in the same way. Intrinsic causes, as tubal polyps, the result of old salpingitis, constrictions, bands, patches of scar tissue lacking in cilia, and general distortions of the lumen of the tube, are of frequent occurrence. I believe that in view of the perfect inertness of the ovum and its absolute dependence upon the ciliary and peristaltic movements for its progression to the uterine cavity, in a length of time before it shall have become too large for passage at all, that enough weight has not been put upon deficient ciliary action as one of the most important factors. But it must be borne in mind, that a recent salpingitis, with the exciting cause still present, militates against any pregnancy whatever, and it is rather in those cases *recovered* from such acute processes that we expect to have favorable conditions to a tubal implantation. Thus it is that the majority of cases are seen in women who have been sterile—the result of an existing salpingitis—for some length of time. And finally, there is a class of cases, the inherited type, which, I believe, is a very important division. And I do not believe that this heredity refers to any obscure unseen parental influence, but is the actual reproduction of anatomic or histologic faults lying in a given family, thus explaining the numerous instances of cases who have a family history of similar cases. In one of my own cases, the patient was able to diagnose her own case, despite her doctor, from having seen her sister in a similar predicament.

Thus the infantile type of tube, spoken of by Freund⁴, is an instance of a gross malformation. And if it be true that the ovum is dependent on the cilia and peristalsis for its passage, it is not difficult to conceive that whole families may have as their inheritance, tubes whose cilia are extremely weak, or whose movement is entirely lacking. These cases would be those which now are not to be explained and are commented upon as being inexplicable.

Dudley² speaks also of reversed peristalsis, which may be brought on by fright or terror, as being a cause, and it seems not to be impossible. Accessory tubes, kinks, accessory openings and unusual length, are also among these factors.

Byford¹ mentions tubal displacements, hernia of the tube, and mutilations, following operations as fistulæ and adhesions. And finally, is to be considered the condition of the ovum itself as Strassman¹² suggests. The ovum may be relatively or absolutely too large for the lumen of the tube. Then an altered membrana granulosa may be responsible for a tardy passage through the tube, by rendering the ovum very adherent to the walls. To sum up in the words of Cazeaux: "When, indeed, we consider the narrowness of the tubal canal, we can readily conceive that any deviations, even slight ones, of the Fallopian tubes, any paralysis, or spasm, any excess or defect of length, engorgement, swelling and ulceration of the mucous membrane, or hardening of its pavilion, or retraction at the internal orifice, in one word all the anomalies and alterations described by authors may take place there, and give rise to ectopic gestation."

Unfortunately, the very early symptoms of a tubal pregnancy are not marked enough to call attention to any pathologic condition, and the proportion of ectopic to regular pregnancies being so small, we are more inclined to ascribe the irregularities of symptoms to some of the numerous nervous and local minor ailments to which the child-bearing woman is so susceptible. But it is for the purpose particularly of calling attention to these deviations and emphasizing them that I have undertaken to discuss the subject.

And as a preliminary remark, I would suggest that however uneventful the early pregnant history of a woman be, if she be a multipara, and has for a long time been sterile, that at least the possibility of an ectopic be considered.

We have as a natural course of events, the ordinary symptoms of a regular pregnancy, the uncertain signs, as nausea, vomiting, etc., being, according to Wincke¹⁸, much aggravated. The cessation of the menses, morning sickness, fullness and enlargement of the breasts, the linea nigra and areola of the breasts, and the increase in size of the uterus, according to Kelly⁸, to the size of a two to three-months' pregnancy.

But in the presence of all these, unless by some accidental examination whereby we chance to discover the pregnant tube fallen into the cul-de-sac, about the second month after the menstrual cessation, in a majority of cases we will be sent for by our patient, complaining of cramps, mostly in the lower abdomen and too often simulating those of an ordinary intestinal disturbance. The woman may have all of the signs of a pregnancy of this period, excepting the absence of her menses, a fact which should at once put us on our guard. Or she may state that her menses had stopped for a month or so, and that she had considered

herself pregnant, when upon the re-establishment of the flow believed herself mistaken.

I cannot emphasize too strongly the great necessity of a most careful examination of the patient, when a condition such as above described suddenly confronts one, and though nothing is found, keeping her under the strictest scrutiny.

These pains are due to (1) the obstructed peristaltic waves of the tube, endeavoring to rid itself of its burden, and (2) to the tension of its walls. Upon examination we are able to make out the enlarged uterus, the soft patulous os, which is not so soft however as in a regular pregnancy, and a mass either to the right or left of the uterus, or as sometimes occurs, in the cul-de-sac. When it does lie here we are able to get ballottement, which can be made out as early as the third month.

Freund³ speaks of the frequent intestinal diarrhea and rectal tenesmus present in these cases. So that summing up the symptoms and signs of an early ectopic, we have: 1. A history of a previous sterility. 2. The usual signs and symptoms of a normal pregnancy. 3. Arrested menstruation to be followed by either an entire return of the function or as an irregular bleeding. 4. Colicky pains, as a rule, beginning with the second month. 5. Intestinal irritation and rectal tenesmus. 6. Uterus enlarged and os soft, but not as soft as in normal gestation. 7. A tumor mass, enlarging and decreasing in size from day to day, lying either to the sides, or in the cul-de-sac (Vertinski¹⁵). 8. A feeling in the woman that this pregnancy differs from former ones. 9. The pulsating vessels in the vault of the vagina, which, according to Cleghorn²⁰, must be considered as the most important, positive, final, physical sign.

As time progresses the differential signs and symptoms become more marked, and new and all important evidence is given us of the aberrant course of events occurring within the abdomen. The colicky pains increase up to the sixth month¹, if the woman live so long, the bleeding now becomes more constant and profuse, and often, along near the sixth or seventh month the decidual cast is expelled⁸, which, if its identity be proved by microscopic examination, is an absolute sign of the condition present. The uterus retains its former size, and becoming pushed over to one or the other sides, and the fetal mass more plainly palpable to the touch than if contained in the cavity of the uterus, becomes most evident to the examiner's finger in all its parts and relations.

When, however, the tubal lumen becomes too small for its growing burden, or the walls too weak, or, by reason of the increasing ovum, its contents pass through the fimbriæ into the abdominal cavity, thus con-

stituting a tubal abortion, then the entire symptom picture changes from one of comparative quiet to one of a most alarming nature, and not easily misinterpreted, provided we have any of the previous data of the case at our command.

The symptoms of tubal rupture and abortion are those of pelvic hemocele², and consist in all the evidences of a severe internal hemorrhage and shock. If the rupture be into the abdominal cavity, or by means of the fimbriæ, the pain may be slight or wanting, and indeed, a very sudden abatement of previous symptoms is a very important point, indicating often sudden release of the tube from its tension and this sudden relief can come only by an escape of its contents. When the rupture be into the cellular tissue of the broad ligament, the pain and shock will be intense. If a small vessel alone be lacerated, the fetus may die and the patient go on to perfect health with a diagnosis of colic.

I know of no better description of the symptoms of shock and hemorrhage dependent on this accident than as given by Byford¹:

1. A sense of bursting or tearing pain. 2. Faintness. 3. Rapid pulse. 4. Vomiting. 5. Sub-normal temperature. 6. Yawning. 7. Sense of sinking and collapse. 8. Cold, clammy perspiration. These are the symptoms of a continuous and unchecked hemorrhage, and, of course, we may, in cases of smaller hemorrhages or ruptures have these symptoms in lighter degree, amounting, perhaps, to no more than a mere faintness.

Contrasted with Tait's curt remark, that "any man who gives an opinion that he diagnosed a tubal pregnancy, or any other lesion, and that its course was this, that or the other, merely upon the unaided discrimination of symptoms, or the dim light of a pelvic examination, I regard with so much suspicion that I do not accept his evidence for argument, save under exceptional circumstances," is Kelly's statement that "the diagnosis is usually easy to make if its possibility of existing always be carried in mind." With the typical findings generally present, as they are, and the possibility of the condition being borne in mind, there should not be a great many cases that escape a diagnosis.

Speaking now of the ruptured tube, at least a sufficient diagnosis to put us on our guard against future disaster can be made. But our dependence must be on the clinical picture, if the uterus itself does not aid us by the expulsion of its decidual cast, for I must give warning against the attempt to secure evidence of the presence or the absence of material in the uterus by the probe, even when so carefully used as described by Reed¹¹ of Cincinnati, who says: "Allow an Emmet

curette forceps to simply gravitate through the patulous cervix, if obstruction is encountered no force is employed, but the instrument is at once withdrawn; if no obstruction is encountered and the forceps drops into the uterine cavity a very simple maneuver only is required to secure the important shreds of decidua." But the danger is not that alone of causing a uterine abortion if our premises prove incorrect, but by setting up tubal peristalsis, producing a tubal abortion, or a tubal rupture. Of course, if we are able to secure decidual cells, we can be firm in our diagnosis and in our request for operation, but I consider the dangers too many to risk the maneuver. When, however, the tube has been ruptured, we are under the greatest responsibility in our diagnosis, and should never, even when the slightest suspicion of such a condition exists, leave our patient's side until assured in our own minds of the exact state of affairs present in the pelvis. Jaggard⁷ states that the only condition simulating to the touch and in general symptoms, a tubal pregnancy, is a pregnancy in a retroflexed uterus, and broadly speaking this is so. Finally, I cannot do better than quote Ingraham⁸ in his summary concerning the diagnosis of this disease:

"When any woman who has menstruated regularly and who has passed her period from four to twelve weeks, is suddenly seized with pain in either iliac region, becomes faint, dizzy, nauseated, pale, generally unable to sit up, tender and sensitive over lower part of abdomen, having a frequent desire to go to stool without being relieved, and when, upon vaginal examination, a boggy mass is found at one side and posterior to the uterus, and a slight bloody shreddy mucous discharge occurs, she has the classified symptoms of a ruptured tubal pregnancy."

In view of the etiologic part played by salpingitis of varying form and stage, it is more than ever our duty, when such cases present, not to allow the patient to go beyond our reach until we feel confident that by one means or another we have secured a physiologically normal tube. Concerning active treatment by an operation as against the so-called conservative method of waiting and hoping for the death of the fetus and resorption of the products of gestation, I can not emphasize too strongly the necessity of regarding the extrauterine tumor as does Wuerth¹⁰, in the light of malignant growth, and the sooner it be removed, compatible with the welfare of the woman, the better. In early cases, as Kelly puts it, "The proposal to defer active treatment, hoping to save the child, is simple sentimentality," and it is not until late in the history of the case that we may feel justified in delaying interference, and then not because of the increased hope of saving the child, but rather from the standpoint of the mother's well being.

In support of this view, I wish to quote Werder's¹⁸ statistics as to the children born from an extrauterine position. Forty cases were reviewed. Of these: 18 died in one week, 5 in one month, 1 in six months, 1 in seven months, 1 in eleven months, 1 in eighteen months, and the remaining were not followed later. This gives a mortality of 65 per cent for the first eighteen months. I believe it is Werder who states that of those children living beyond this term very few were of normal growth or health, proving rather a burden upon their families and the community. So that the argument for the delay is to my mind a very weak one.

In unruptured cases, simple excision of the tube is called for, the technic being the same as for a salpingitis, and with the exception of some increase of vascularity, is not much more difficult. In those cases, however, running beyond the tenth to the twelfth week, when the fetus has almost surely escaped partially or *in toto* into the abdominal cavity or between the leaves of the broad ligament, we must be prepared for more extensive surgical treatment.

If upon opening the abdomen, free blood in the cavity under considerable pressure is found, active hemorrhage may be assumed. The clots and free blood is to be removed as quickly as possible by scooping out with the hand and sponges, and the bleeding points sought. If too numerous or obscure, or the hemorrhage too profuse, plunge the hand in and seek the fundus of the uterus, then following out the broad ligament, place long clamps, two on each ligament to control the uterine and ovarian arteries.

Treatment of the placenta is a very perplexing problem. It is highly desirable, if possible, to effect the removal of the placenta at the primary operation, thus obviating any further interference and hastening ultimate cure very greatly. But those writers who advocate removal of the placenta in any event, either have been very fortunate in their cases in having had only those cases where it was possible, or lack in experience. One must judge at the time of the operating, whether it be possible to remove the placenta without incurring a furious and uncontrollable hemorrhage, and largely upon his judgment at this juncture will depend his success in the case. It is sometimes possible, even in a patient who has gone to term, to separate the placenta from the sac without inducing more than a transitory bleeding, soon checked by the application of ligature and heat. But when upon attempting to lift up one edge of the placental mass much oozing or hemorrhage results, be content with cleaning the abdomen as much as possible of blood and blood clots, and stitching the sac to the edges of your wound, packing

thoroughly with iodoform and gauze, leaving the placenta to come away as it naturally separates. Van de Warker¹⁴ recommends the use of formalin to harden the placenta, 1-1000, and then removing piece-meal. But in one case in which I tried it, within eight hours the temperature went up, and staid up until I inserted my finger and found a pus sac lying off to one side, the drainage of which into the the sac cavity proper had been contracted and closed by the chemical.

The indication for immediate operation in acute ruptured cases is absolute. If the patient be in shock from the peritoneal insult, as shown by the pallor of the surface, the cold clammy body, extremely rapid pulse and high temperature, all the result of paralysis of the heat centers, first wait until you can stimulate to some degree by salt solution intravenous injection and other cardiants, and the application of warmth to the body. But if internal hemorrhage be the cause of the collapse, as shown by a "rapidly increasing pulse, anxious facies, gradually progressive pallor of mucous membranes, sighing respiration, yawning, increasing elevation of temperature of the abdominal surfaces apparent to the touch," then the sooner we can get our forceps within the abdominal cavity, in search of the bleeding points, the better. When, however, the case has run on beyond the seventh or eighth month, the placental circulation and attachment has become too well established to attempt any interference, and the case should be kept under observation until two weeks after we have determined the death of the fetus.

I have had five cases coming to operation, which I consider of sufficient interest to review.

Case No. I.—Aged thirty-four years; had had three previous normal pregnancies. One sister had died of a ruptured tubal pregnancy. One day, while in the act of defecation, she was taken with a severe pain and fainted in the closet, where she lay about an hour, until she was able to get back to the house. She now noticed some bloody discharge from the vagina, and sent for a physician, who left her some cardiac stimulant and allowed her to be up and around. She had a repetition of the attack in two days, and again her doctor prescribed for her in the same way. Finally, upon the third repetition of the attack, she herself diagnosed her condition, and I was called for operation.

Case No. II.—Aged twenty-seven years; had missed her menses about two weeks, when she was wakened at about three o'clock in the morning by severe pain in the abdomen and faintness, with some bloody vaginal discharge. Her physician gave her some anodyne, and allowed her to be up and around. A repetition of the attack took place in four

days, and now the doctor diagnosed some peritoneal irritation and advised her to remain in bed. Six days following, the condition continuing, another physician was called, and he, being suspicious of ectopic gestation, called for me for operation. These two cases, owing to delayed diagnoses, had a fatal outcome, as they both were in a very serious condition when I reached them, and failed to react, owing to the loss of blood and shock.

Case No. III.—Mrs. —, aged twenty-nine years; had had pain in the right side at five months' pregnancy and a diagnosis of appendicitis had been made. She had a temperature of from normal to 102°. When she came to me she was already septic, and had a severe acute nephritis. By two weeks' general treatment she recuperated rapidly and returned home. After eleven months' pregnancy she returned for operation, the fetus being dead. I used in this case the sub-arachnoid injection.

Case No. IV.—Gave me no history of previous pelvic trouble. At six weeks' pregnancy she was taken by severe pains and some discharge of blood. The attending physician diagnosed appendicitis. These attacks continued up to seven and one-half months, when I was hastily called to deliver a case of placenta previa. I brought the patient to the hospital and opening the abdomen removed the ruptured tube and the fetus therefrom.

Case No. V.—This patient had been married but a few months, and had a previous history of appendical trouble. Upon vaginal examination I made out the enlarged appendix as well as an orange-sized tumor close to it. She had reported being unwell eight days previous and I therefore did not consider the question of an ectopic as entering into the case. She was prepared for appendectomy. Upon opening the abdomen I found not only the pathologic appendix, but also a ruptured tubal pregnancy with considerable blood in the abdominal cavity. The tube had probably ruptured the night preceding the operation.

Summary.

1. Cases of ectopic gestation are by no means infrequent, and are among the most serious conditions with which we have to cope.

2. Generally they occur in those near the middle of life, and having a previous history of sterility.

3. The symptoms especially to be carried in mind are: 1. The woman will have missed a period. 2. Colicky pains. 3. Bloody dis-

charge from the vagina, or an irregular continuation of menstruation, often leading the woman to believe herself not pregnant.

4. With few exceptions, and these dependent only on the woman's condition or welfare, the indication for immediate operation in these cases is absolute.

In conclusion, let me say, no case of "colic" in a woman capable of procreation, more especially in one married, should be allowed to pass by unscrutinized, without the thought of ectopic gestation in mind. And to be emphasized a thousand fold is that no such symptom in a pregnant woman should be lightly regarded. Even though in many hundreds of cases as it will be, our care results in nothing but a confirmation of the transitory diagnosis that passes through our minds, yet sometime, to some woman, it will mean her life.

97 Stephenson St.

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VESICOFIXATION OF THE UTERUS.

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Of the various procedures and operations for the correction of retrodeviations of the uterus, that of fixing the fundus uteri well forward upon the vesical peritoneum through the vaginal incision, has

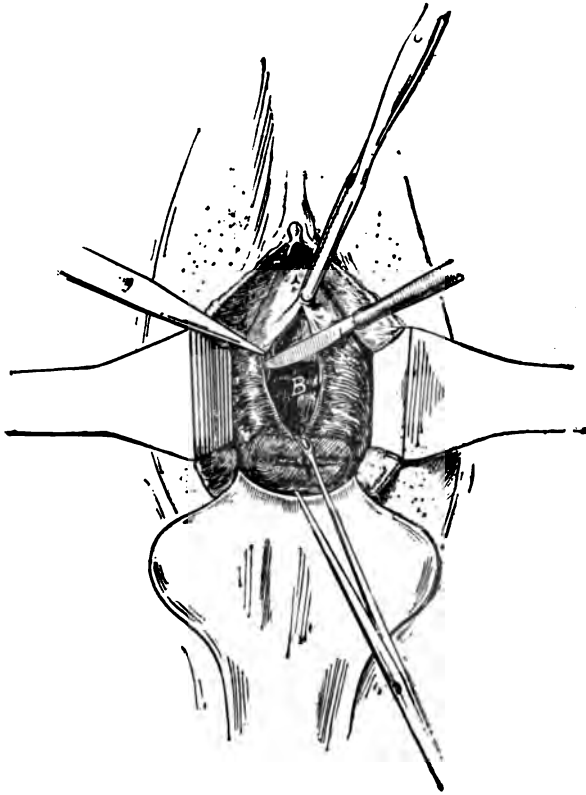


Fig. 1.—The anterior vaginal wall is first incised in the median line and the flaps dissected back on both sides.

seemed to be least understood and appreciated. An endeavor to assist in making clear some of the points of technic and the desire to record an interesting case followed by pregnancy, are the excuses for this paper.

Retrodisplacements without adhesions, persisting after earnest and

careful treatment and producing distressing symptoms such as back-ache, dragging sensations and neuralgia increased by slight exertion such as walking, chronic constipation and intense dysmenorrhea, are best relieved by vesicofixation.

Of course it is understood that appendiceal trouble of any kind should be excluded. The operation is not contraindicated by the presence of a hymen.

Vesicofixation is a far superior procedure to the Alexander opera-

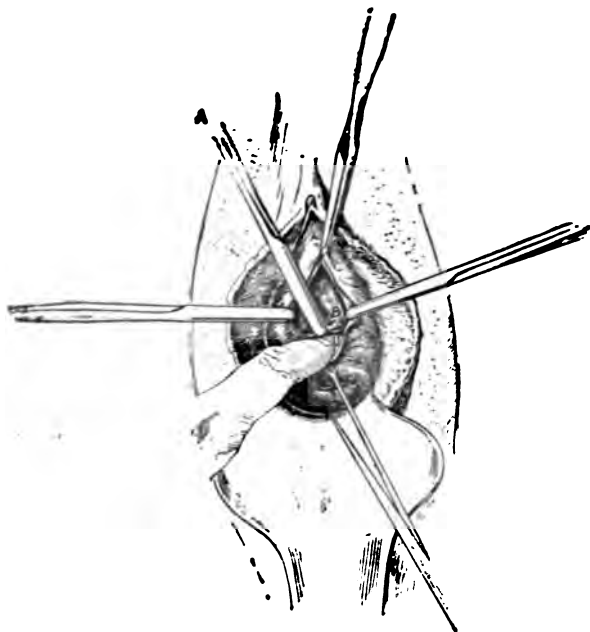


Fig. 2.—The bladder is now dissected free from the uterus, up to the peritoneum. A; forceps on bladder.

tion in that it allows inspection and thorough examination of the adnexa, with the opportunity of correcting cystic degeneration of the ovaries and salpingo-oophorectomy or salpingostomy may be performed through the anterior opening if deemed necessary; if many adhesions prevail, they may be reached and separated more readily by a posterior colpotomy.

Endometritis which usually accompanies these cases or any other existing abnormality of the external genitalia can be treated and relieved at the same time, thus obviating a second operation or the inconvenience of changing position necessitated by an abdominal celiotomy.

The lessened danger to patient, shorter time in bed and absence of visible scar should also be taken into consideration.

Some authorities claim it is best not to introduce a sound, but I hold this should always be done in these displacements, in order to determine any existing stenosis of the internal os and thus be prepared to overcome an additional causative factor of dysmenorrhea by division and gradual

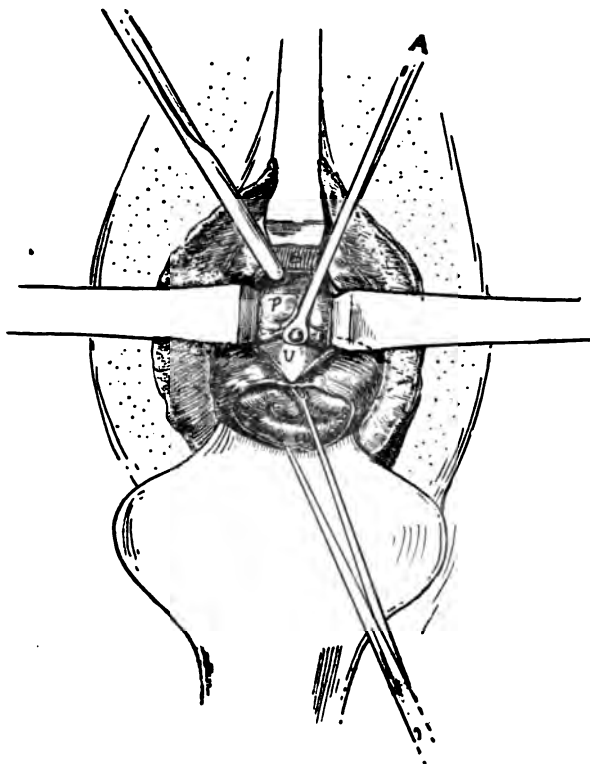


Fig. 3.—Bladder pushed up forward, free from peritoneum, which is now incised transversely and lifted up out of the way. A; forceps on peritoneum.

divulsion or dilatation. The use of a repositor in attempts to bring the uterus forward is dangerous and should be done with great care.

The patient should be prepared several days in advance by mild doses of calomel, so that the bowel may be kept well open and should not be purged the evening before for obvious reasons.

A thorough vaginal cleansing followed by bichloride douches the day before and immediately preceding the operation is sufficient.

It is not necessary to place the patient in the Trendelenburg position at any time during the operation.

With the posterior retractor in place, the cervix is grasped in the double volsella and drawn down as far as possible and the uterine sound passed, to note again the exact position. A tenaculum forceps or Senn's

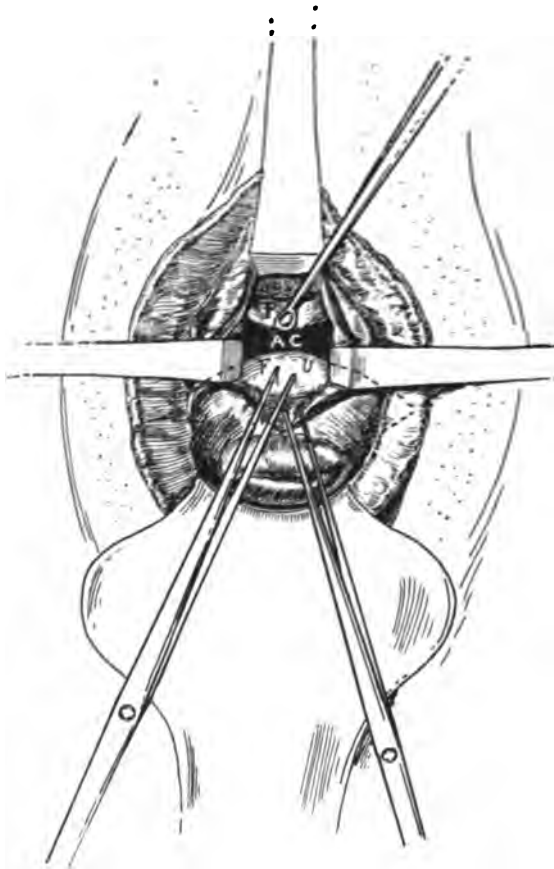


Fig. 4.—Bladder and peritoneum held up by retractor. Fundus brought forward and down with tenacula.

forceps now takes hold of the anterior vaginal wall in the median line and stretches it out and away from the cervix. The incision is started just below the forceps and 4 or 5 cm. away from the cervix, extending to the latter and down to the bladder wall (*Fig. 1*).

The vaginal mucosa is now dissected back on both sides a distance

of 2 or 3 cm. and also well separated from the bladder where it joins the uterus. This union is divided with knife or scissors and the bladder quickly pushed off and away from uterus with finger or sponge on forceps. The hemorrhage ensuing is slight and easily arrested (*Fig. 2*).

When the peritoneum is reached, it is better to continue the pushing

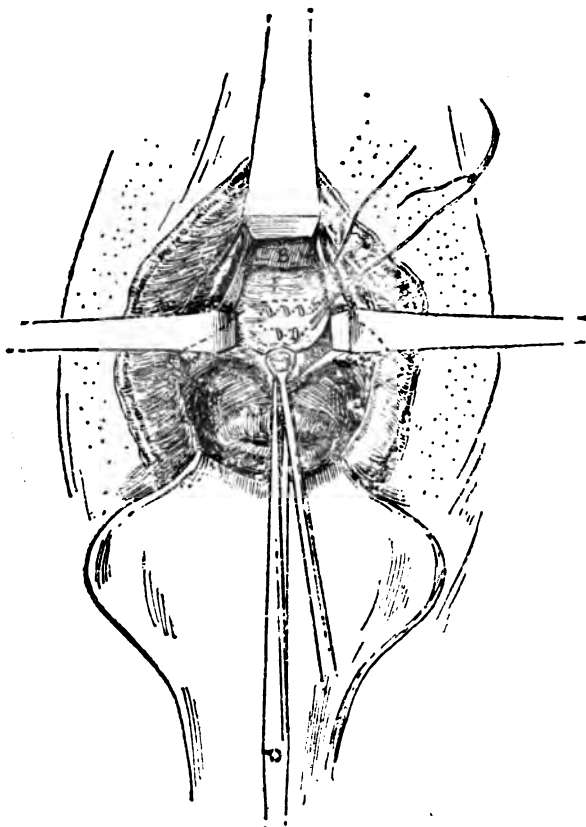


Fig. 5.—Peritoneum sutured to fundus.

and separate it well back from the top of the bladder before opening it in front of the uterus. After opening this membrane transversely, the vesical portion is seized by forceps and held forward while two fingers are introduced for exploration (*Fig. 3*).

A long Pean's retractor is now inserted anteriorly to press forward the bladder and peritoneum, the cervix is released and pushed upward while the body of the uterus is grasped with two-pronged tenaculum

forceps as high as possible and drawn forward. Another pair of forceps is applied higher up, the first removed and this continued until the fundus uteri appears at the peritoneal opening (*Fig. 4*).

Upon pushing the fundus to the right, the left tube and ovary may be drawn down and inspected and likewise the opposite side.

With the fundus held firmly by the forceps and drawn well down, the peritoneum from the bladder is brought back and over it as far as possible, where it is sutured between the tubes with a fine continuous

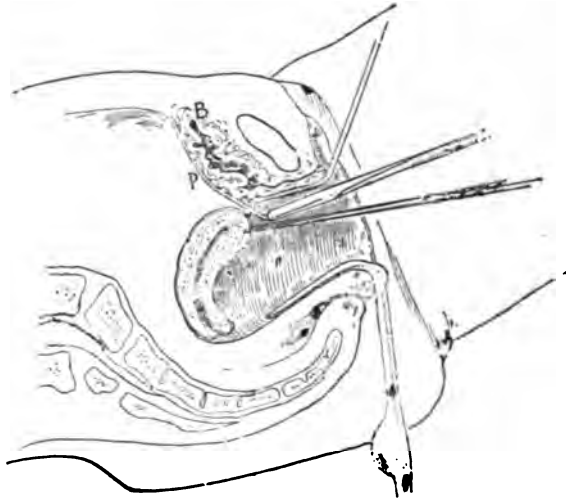


Fig. 6.—Section showing peritoneum held over fundus ready for suturing.

chromicized catgut and any excess of peritoneum removed (*Figs. 5 and 6*).

The edge of bladder first separated from the uterus is stitched high up on the anterior surface of the uterus with a single chromicized mattress suture (*Fig. 7*).

The two edges of the vaginal wound are now carefully approximated with interrupted catgut sutures, passed just deep enough to exclude hollow spaces (*Fig. 8*).

The bladder is catheterized and a loose vaginal packing of plain gauze inserted.

The following case was taken from thirteen others, ten of which had other injuries or conditions corrected at the same operation:

B. B., colored, age sixteen years, weight 100 pounds, entered hospital under permit 2145; always enjoyed good health until two years ago, when she was delivered of a full term child; stillborn.

Complained of pains in back and pelvis, headache, vaginal discharge and inability to control bowel.

Examination revealed laceration of perineum to third degree and of the cervix, retroflexion, movable with beginning prolapsus, endometritis

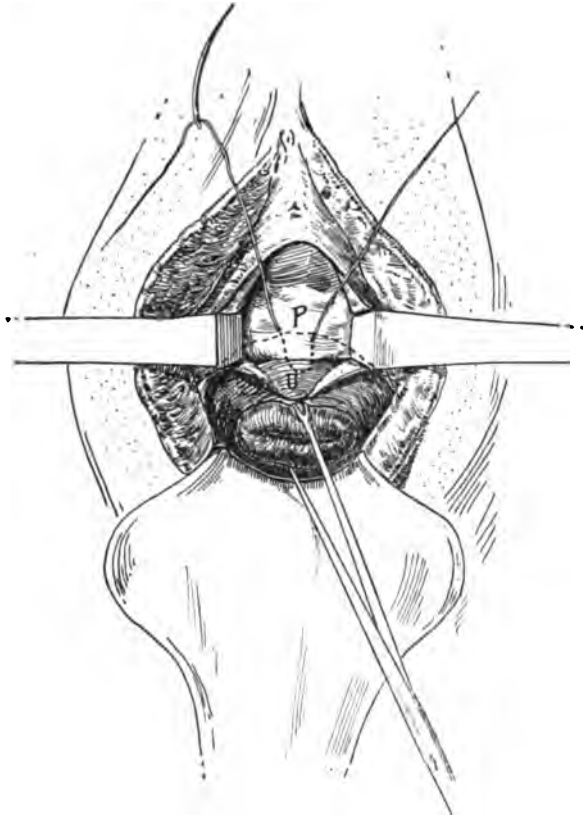


Fig. 7.—Bladder sutured almost up to original peritoneal fold.

and urethritis. Urinalysis negative. No gonococci found in discharge. Adnexa normal.

After a course of treatment with douches, etc., patient was prepared for operation.

The cervical canal was first dilated and the uterus thoroughly curetted; then the double laceration of the cervix was repaired. Both lips of the cervix were held in the double volsella while vesicofixation of the fundus was performed.

Perineum was repaired and sphincter restored (after Kelly), with the exception of a buried continuous catgut suture approximating the edges of the rectal mucous membrane but not including it.

Patient was out of bed in about two weeks and examination showed cervix had not united. Uterus in good position forward.

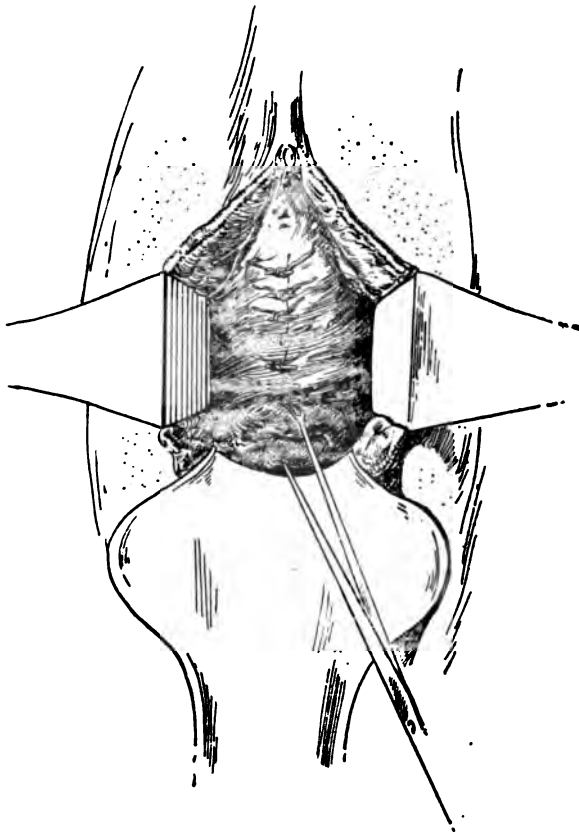


Fig. 8.—Operation finished.

She requested her discharge, saying she would return for another operation on the cervix.

After three months she again entered hospital, having missed her menses for two months; still complained of slight leucorrheal discharge and some pains in region of ovaries. Had morning sickness and an occasional attack of vomiting. No bladder pains or symptoms what-

ever. Uterus enlarged, size of two months' pregnancy, some tenderness on pressure anteriorly.

Patient stayed but a short time, promising to return later if any trouble arose. However, seven months passed before she again appeared and was delivered without difficulty.

The following is a brief outline of the obstetric history:

Position of the child, O.L.A. Fetal pulse, 132. Duration of first stage, 5 hours 15 minutes; second, 15 minutes; third, 10 minutes.

Measurements of pelvis, D. Sp. 21 c.m.—D. Cr. 24.—D. Tr. 29.—D. B. 19. C. Diag. 11.—C. Vera 10.5.

Measurements of child's head, B. P. 7.5 c.m.—B. T. 8.5.—O. M. 12.5.—O. F. 13.—S. O. B. 8.5.—Circ. 28.5. Child was mature, female, and weighed 7.5 pounds.

About two months later another trachelorrhaphy was done, under subarachnoid cocainization, one-third of a grain of the drug being injected into the spinal canal. Patient left the hospital, in due time recovered, the uterus being forward over the bladder in the same position it occupied after the vesicofixation.

The object of the operation is to leave the uterus in an easy position of slight anteversion, therefore care should be exercised not to suture the peritoneum too far back upon the uterus; likewise, vaginal fixation is not applicable to these cases, unless after the menopause and should be resorted to only for complete prolapsus.

THE CONSERVATIVE SURGERY OF LESIONS OF THE APPENDAGES.*

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In speaking of lesions of the appendages I will take up in the following lines only the inflammatory intraperitoneal lesions. I will not speak, then, of ovarian tumors or of parametritis (pelvic cellulitis), I will confine myself simply to conservative surgery of salpingo-ovaritis. While supposing that in doing thus, I conform to the intention of the committee of our section, I wish nevertheless to circumscribe clearly the theme of my report.

Before speaking of the treatment of salpingo-ovaritis, it is important to recall the symptoms of this affection and above all to estimate its danger.

As for the first point, the task is an easy one since the symptomatology of salpingo-ovaritis is to-day quite complete. In the acute stage it is the fever which predominates in the train of symptoms of general infection. As a local symptom, there is the pain in the lower part of the abdomen. In the chronic stage which we see most often, the infection is of little importance and if there is an increase of temperature, it is troublesome because of its duration rather than because of its degree. In many cases even the fever is absent and the predominating symptom is the pain. That symptom—being given its subjectivity—is always difficult to estimate, especially in the case of pelvic pains in women. Besides the pains, the other symptoms (discharge of blood, chiefly under the form of profuse and prolonged menstruation but also under that of irregular hemorrhages, and leucorrhea) are of secondary importance. There only remains sterility which ought to be mentioned here.

The estimation of the dangers of salpingo-ovaritis is more difficult. Old publications can scarcely enlighten us on this point, since the differentiation between salpingo-ovaritis and other kinds of pelvic suppurations is rarely made. On the other hand, the recent statistics give us no exact idea of the danger of salpingo-ovaritis, because modern surgical treatment intervenes the moment one fears, with or without reason, that the danger is about to present itself.

*Report read before the Section of Obstetrics and Gynecology of the XIVth International Medical Congress, Madrid, April 23-30, 1903.

But after one has had the opportunity of observing a certain number of cases of salpingo-ovaritis—and what gynecologist however slightly experienced does not have such opportunity—one easily notes that the cases of death due to perforation of a pyosalpinx are extremely rare. For example, I know of only one out of more than 600 cases of salpingo-ovaritis which I have observed in the last six years. Judging from isolated publications my experience seems to be about that of every one else. Yet here in Holland, as everywhere else I suppose, patients are slow in offering themselves for treatment for inflammation of the appendages, and incurable cases form an important part, if not the majority of the list of patients. This fact is not a proof evidently, but it gives good ground for the impression that the danger of death from pyosalpingitis is not very great.

Let us now see what treatment can do against this disease which we ought to consider as very troublesome, if not very dangerous.

Here the first question presents itself: is salpingo-ovaritis an affection which always enters the domain of surgery, taken in the narrow sense of operative treatment? Theoretically almost every one agrees that it is necessary to answer that question in the negative, but it is allowable to doubt whether really theory and practice always coincide. At any rate, one seldom sees figures given in support of this general opinion and I shall permit myself to give as exactly as possible the reasons for my negative answer to this foregoing question which seems to me to be of the greatest importance to the subject of this report.

I will first give some figures. Since the month of May, 1896, to the middle of last December I have treated in my clinic 612 cases of salpingo-ovaritis. Out of these 612 patients, 433, say 70 per cent, have been more or less completely cured *without operative intervention*. The uniform treatment in all of these cases has been the following. Complete rest in bed and the application of an ice bag as long as there was any fever; the acute symptoms passed, warm vaginal injections (45 degrees centigrade), vaginal tampon with glycerine and warm water compress (Priessnitz's bandage) on the lower part of the abdomen. The duration of the treatment varied from three weeks to several months; the average duration could be rated at about six weeks.

I said that these 433 patients had been more or less completely cured. Really one must deduct from the number some cases, rare, however, where the patient discontinued treatment and left the clinic too soon. Again a certain number of cases left the clinic having still a puffiness of the appendages absolutely painless. These women continued the warm injections for a shorter or longer period during which they re-

maintained under the observation of the polyclinic (out-patient department).

In every case the women considered themselves cured, having no longer subjective symptoms of their disease. Evidently it is possible, probable even, that certain among them have had slight returns of abdominal pains, but on the other hand it is equally sure that there have been no relapses, even slightly serious, except in a very limited number of cases. Out of the 433 cases there are about twenty who have been treated more than once in the same manner, which would equal about 5 per cent of relapses more or less serious and in any case sufficiently troublesome to actuate another sojourn at the clinic. However, this last figure ought to be considered as too low for two reasons. First: a part of my patients in this class are recruited from the servants of beer gardens and come almost all from Germany and stay only a short time here. In case of relapse the patient may perhaps be far away. Again, it is not certain that in case of serious relapse the patients have returned to my clinic, since they can be treated under some other service. The regulations of public charity here at Amsterdam do not render the changing of hospitals very easy, so that the number of these last cases ought not to be very great. I have asked information on this subject from the heads of other gynecologic services and their answer has confirmed my supposition. I add, finally, that in the above named cases of relapse are included those who have been under treatment at other services, either at Amsterdam or elsewhere.

Since it is impossible to make an exact estimate of the two factors mentioned above, it is then also impossible to say how much the 70 per cent of cures without operation ought to be diminished. In order to be certain not to exaggerate the results of non-operative treatment, let us say that *a little over one-half of the cases of salpingo-ovaritis necessitate no operative intervention whatever*. The significance of this fact is clear, and it is important to emphasize it, since in these modern times even it is held a part of good surgery to remove the appendages when they are diseased.

What is to be done in the cases which do not yield to the medical treatment described above? There is first balneotherapy which is of a surprising efficacy, but which unfortunately is not open to all purses. There are the mud-baths which should be prescribed in these cases, and according to my experience those of Elster and of Franzenbad merit the place of honor in the treatment of salpingo-ovaritis. On the other hand salt water does not merit at all the reputation given it on this subject. There is quite a little truth in the following remark which

I heard one day from a doctor at a resort for salt water baths. "If ever you have a patient who is opposed to the salpingectomy advised by you, send her to me. She will return to you with pains so very severe that she will beg you to operate upon her as soon as possible."

Electricity does not seem to give satisfactory results and the electric puncture advocated by Apostoli, acting absolutely in the dark, ought to be rejected as much as massage. This last method, of value in some rare cases of non-suppurating remains of parametritis (pelvic cellulitis), is excessively dangerous in the cases of obstinate salpingo-ovaritis, where one is never sure of not finding a purulent focus in the inflammatory intraperitoneal mass.

There is in short, before taking up the operations properly so called, the method of Walton-Dol  ris, which consists in the large and permanent dilatation of the uterus by means of curettage and local treatment of the surface of the uterine cavity. This method seems about to fall into oblivion, and, in my opinion, quite justly. For one who understands the anatomy of salpingo-ovaritis, for one who recalls that it is not generally a question of a simple abscess, but on the contrary of multiple abscesses either not communicating with one another at all or very slightly, for one who knows, in short, that the tubal isthmus, the part the nearest to the uterus, is not generally distended by the pus, there is no doubt possible that the turning of the contents of the tubal sac into the uterine cavity can be accomplished but very rarely. The value of this treatment, well proved in some instances, seems to me to lie especially in this that the Walton-Dol  ris method acts in the same manner as the treatment described, by exciting the reabsorption of the inflammatory products. But it cannot be denied that it is a knife that cuts both ways, and it seems *a priori* that one has as much chance, if not more, of causing the exacerbation of the intraperitoneal inflammation as of exciting the reabsorption. It is on my part an objection entirely theoretical, but it has always seemed so grave to me that I have never had the courage to try permanent dilatation in cases of salpingo-ovaritis.

There remains then the operative treatment.

Let us speak first of radical treatment. In unilateral affections, it is simple salpingectomy and usually through the abdominal passage. I do not believe there could be found to-day a single surgeon still of the opinion of Lawson Tait, that is always necessary to remove both tubes, even in unilateral affections.

In bilateral affections one has the choice between double salpingectomy, abdominal hysterectomy and vaginal hysterectomy. Since it

is not the purpose of this report to search for the best method of radical operation in pyosalpingitis, it is not necessary for me to attempt to rate the relative value of these different processes. That which is important, is to be certain upon three points. *First*, the danger of these operations; *second*, the result, especially from the standpoint of subjective symptoms; *lastly*, the disadvantages attending to these processes.

What is the danger of radical operations? Simple though it may seem, it is extremely difficult to give an exact answer to this question. That is owing to the fact that the danger increases or diminishes according as the indications of the operations are more restricted or still more relaxed, as it is easy to prove. I will first make use of the same figures used by M. Bouilly^a in his remarkable report upon the treatment of pelvic suppurations, presented to the Geneva congress.

Laparotomies, 1626 cases, 92 deaths, say 3.5 per cent. Simultaneous ablation of the appendages and of the uterus by laparotomy gives a mortality of 4.6 per cent.

Out of 32 abdominal pyosalpingotomies which I have performed since 1896 I have had 7 cases of death, say 21.8 per cent. The difference between the two figures is enormous and could give rise to the conclusion that I am an extremely unskillful operator. To annul this too hasty conclusion (happily for me) I cite the publication of one of my former assistants, M. Schouwman¹⁸ that out of 27 salpingotomies performed between 1887 and 1890 I had only one case of death, a mortality, say, of 3.7 per cent. The explanation of the wide difference between my own two sets of figures is simple. In the small series of M. Schouwman, as in the large statistics cited, are mingled all of my abdominal castrations for affections of the appendages, while in my operations performed since 1896, only serious pyosalpingotomies are included. I insist upon this last qualification because it is important. Since I have undertaken the direction of the gynecologic clinic at Amsterdam, the relatively enormous number of cases of salpingo-ovaritis which I have treated has rendered me more and more conservative, so that I never perform salpingotomy unless in exceptional cases, and which do not lend themselves to vaginal hysterectomy. The importance of the change of my indications shows clearly in the result of all my abdominal salpingotomies taken together since 1896. There are 53 of them with 8 cases of death, a mortality, say, of 15 per cent. The difference between this 15 per cent and the 3.7 per cent of the first series is too great to be explained by chance and the too limited number of cases; it can only be explained by the selection of cases for operation.

In the same statistics quoted by M. Bouilly there are found out of

1113 vaginal hysterectomies 39 deaths, say 3.5 per cent. In this operation also my conservative tendencies which reserve hysterectomy for exceptional cases are perceptible. Out of 32 cases operated upon since 1896 I have had two deaths, say a mortality of 6 per cent. (I would have it remarked here that my secondary hysterectomies, after unsuccessful colpotomy, have not given a single case of death.)

Let us consider some other figures taken somewhat at random from the publications of different operators.

M. Boldt² has 7 cases of death in 67 pyosalpingotomies, about 10.4 per cent; 8 cases of death in 112 salpingotomies of all sorts, about 7.1 per cent.

M. Schauta¹⁷ has 17 cases of death in 290 pyosalpingotomies, a mortality then of 5.8 per cent.

M. Jacobs¹¹ has 3 cases of death in 51 pyosalpingotomies, a mortality of about 6 per cent; 8 cases of death in 214 salpingotomies of all sorts, about 3.7 per cent.

For vaginal hysterectomy the statistics of M. Segond, published by M. Baudron¹ give 114 cases of suppurating lesions with 13 deaths, a mortality of about 11.4 per cent. In 82 operations of non-suppurating lesions, the mortality was null; in all, a mortality of 13 out of 196, or about 6.6 per cent.

I have purposely taken these figures from the arsenal of those who are partisans of radical treatment, in order not to darken too much the picture.

The conclusion drawn from all this seems to me to be that radical operations, abdominal as well as vaginal, give a mortality of from 5 to 6 per cent at least.

Let us examine, now, the second question: that of the results from the point of view especially of subjective cures.

M. Veit²⁰ arrives at the conclusion that in abdominal salpingotomy very nearly 85 per cent of the patients are more or less completely cured.

M. Delbet⁴ has found in 85 observations 45 complete cures, 31 incomplete, and 12 failures, which gives 54 per cent. of complete cures.

A. M. Richelot¹⁶ has given total vaginal castration 94 per cent of definite cures, and laparotomy 64.5 per cent.

For hysterectomy, the number of complete cures obtained by M. Segond does not perceptibly differ from the preceding, being 92 per cent.

M. Boldt² arrives at 56 per cent of complete cures by laparotomy. Let us add, finally, that in the thesis of M. Baudron is found a list of

remote results published by the laparotomists, in which the total of complete cures varies from 31 per cent to 91 per cent.

The difference between these figures, which one could multiply at will, does not fail to astonish one a little at first sight. It explains itself partially by a sufficiently well-marked superiority of hysterectomy over laparotomy, but it proves especially that the criterion of complete cures is not the same for all operators. If those who only note 31 per cent of complete cures can be classed as pessimists, on the other hand, those who claim 94 per cent of complete cures must be considered optimists. The truth stands probably between the two, although from what I have seen myself it leans more to the side of the optimist. If it is impossible to fix the chances of complete cure by an exact figure, one must in every case admit that they are not at all certain, so that an operation the most radical in an anatomical sense is not always so in a clinical sense.

Lastly comes the question of the inconveniences, the disadvantages of radical operations. Upon this point there is no divergence of opinions.

For laparotomy, there is first the danger of ventral hernia which mounts up—whatever one may do for the suture of the abdominal walls—to between 10 and 20 per cent.

For hysterectomy and bilateral salpingectomy there follow the symptoms of anticipated menopause. These symptoms well understood and perfectly studied in these later years by M. Jayle¹³ and M. Werth²¹, not to mention others, seldom fail. For the optimistic surgeon they are nothing but "*ennuis*," but, in truth, one must have a robust optimism not to apply a stronger term to flashes of heat, loss of memory, modifications of character, disturbances of nutrition, neurasthenic troubles, etc.

All these consequences of castration present themselves almost without exception, though not always in the same degree. Their duration is variable, and the certainty does not exist that they will disappear in two or three years. The cases in which they are found to be lasting are not rare.

I have not mentioned sterility in this report. In truth, it is of only secondary importance here. In the cases of double pyosalpingitis, it exists as a result of the disease and the operation, radical or not, and nothing can change that. In unilateral affections, on the contrary, every one agrees, at least in principle, that one must perform partial operations.

Unfortunately it is only in principle that one agrees. Evidently, one respects and wishes to respect that which is healthy. But, we know how very rare it is to find on one side pyosalpingitis and on the other

a truly healthy tube. Also, one finds in the observations exactly described of all those who advocate radical operations, some cases in which the disease, in truth, was bilateral, but where on one side or the other the complete cure with permeability of the oviduct has been perfectly possible. In such cases sterility is caused by the operation and that without any need, hence it must be inscribed as the result of the operation. And that this accusation is not made lightly, every one knows as well as I. Nevertheless I wish to justify it by quoting a passage of the discourse made by M. Macnaughton-Jones¹⁶ at a meeting of British Gynecological Society, Nov. 14, 1902.

"Being given a case of disease of the appendages in which the appendages are seriously affected, the possibility of a partial infection of the appendages of the opposite side ought to be earnestly discussed with the patient, and one should make sure of her decided wish on the subject of the preservation or extirpation of these. One must make her understand the possibility of a second laparotomy; it is not sufficient that the surgeon be left free to do what he judges necessary, but it is also necessary to know the determined wish of the patient, after having given her as clear an explanation as possible of the advantages and disadvantages of the two courses to be followed.

If a reasonable doubt exists as to the future condition of the appendages in question, I believe the best course to follow is to remove them, provided always that the patient has given her full consent to this, when it is deemed necessary."

Very well, I commence by saying to Macnaughton-Jones that I do not hesitate an instant to class him in the last of the four categories of gynecologists which he admits—the rascals, the imbeciles, the ignorant and the honest—but I permit myself to doubt whether it often happens to him to spare appendages which are not absolutely healthy. In the words quoted from Macnaughton-Jones, words full of a frankness which do honor to him who speaks them, I find a proof for the justice of my observation: that in certain cases one must put sterility as a result of the operative treatment of diseases of the appendages.

In summing up what has been said, it is necessary to state that the radical operations in salpingo-ovaritis present:

a. A danger of death which ought to be estimated at 5 or 6 per cent at least;

b. Some chances more or less great of not giving complete relief to the patient;

c. The certainty of remote disagreeable consequences which may be

as troublesome at any rate as the complaint which occasioned the operation.

On the other hand, what is the status in conservative operations? To answer this question, it is necessary first to divide it into many parts and inquire: 1. What conservative operations should be taken into consideration? 2. What are their dangers? 3. What are their results? And lastly, in order to strike an exact balance to oppose to that of radical operations: 4. What are the cases to which conservative operations are applicable?

Through the abdominal passage may be performed:

a. The liberation of the tube from the adherences which enclose it, performing afterwards salpingorraphy if one chooses (Pozzi).

b. The resection of the tube (A. Martin).

c. Salpingostomy (Skutsch).

d. The combination of salpingotomy and salpingorraphy, salpingo-ovaro-synesis (Clado).

e. Salpingectomy followed by the transplantation of the ovary into the uterine tissue (Palmer Dudley).

Through the vagina, one can clear a way to the tubal collections, in order to treat next the diseased appendages in the manner suitable to each case.

In order to be able to answer the second question, that of the danger, we must for the moment inevitably include in the same statistics all the various conservative abdominal operations. In this way only is it possible to obtain a figure high enough not to be influenced by hazard.

I can find, thus, 101 observations of conservative abdominal operation* with two cases of death.

For colpotomy I will make use of only my own statistics as their number is high enough to warrant their being put in the ranks of large statistics demanded by M. Bouilly at the congress of Geneva. Colpotomy performed in 118 cases of pyosalpingitis or hydrosalpinx has given me two cases of death.

The mortality of conservative abdominal operations seems then to be about 2 per cent; that of colpotomy is not over 1.75 per cent. This insignificant mortality in colpotomy acquires still greater value for the following reason. These 118 operations in colpotomy do not represent selected cases, but quite the contrary. For more than three years I have always performed colpotomy when there was any indication for operative treatment of inflammatory tumors of the appendages. These

*The conservative operations upon the ovary are not included in these statistics.

then are not slight cases, rather the contrary, since I employ almost to excess the medical treatment, as I have said above; there is left me for operative treatment only the very serious acute cases and the very stubborn chronic cases. Calling attention, besides, to the fact that my two mortal cases were cases of acute infection, I have a good right to oppose my 1.75 per cent of mortality to the 5 or 6 per cent of the radical operation.

Together with danger of death, must be noted, in abdominal operations, that of ventral hernia which is necessarily the same as in radical operations.

Posterior colpotomy offers only the danger of wounding the rectum, a danger which is no greater than in vaginal hysterectomy, so that it does not enter into account in this any more than in that.

For the answer to the third question—what are the remote results of conservative operations?—we meet the same difficulty as in estimating the remote results of radical operations. So here the figures are no more conclusive than they were above.

Out of 101 cases of conservative abdominal operations, there are 74 in which the remote result is indicated. Eleven times a poor result is noted and in four of these cases a secondary radical operation was necessary. For the 63 other cases the result is given as satisfactory, good, or even excellent, which would be equal to 85 per cent of complete cures. This high figure is owing certainly, in part, to the optimism of the operators which shows itself more especially when it is a question of isolated cases than when one is disposing of a series of slight importance. On the other hand, the great number of complete cures indicates certainly this, that conservative abdominal operations are performed for the most part upon selected cases which in themselves are but slightly serious.

Out of my 118 operations in colpotomy there are, first, 14 where the result has been clearly poor. Among these 14 cases are two women who probably would have been cured by a second colpotomy which they did not wish to undergo, and one where the local condition presents nothing abnormal, but who continues to suffer from pelvic neuralgia. Four times the continuation of tubal inflammation has necessitated a secondary radical operation. The 7 cases remaining represent the condition of tuberculous salpingitis, which has always given me a poor result and for which I have three times performed secondary hysterectomy.

Of the other cases, I have succeeded in obtaining news from but 31 of those whose operations date from at least a year back. In these

31 cases cure was complete in 18, almost complete in 11. The other two were entirely unsuccessful. From these reports it is probable that the great majority of the others operated upon are cured also, especially because the women incompletely cured have almost all returned to consult us at the polyclinic, while we have had to look for the others with, as one sees, rather fruitless results.

But that which is more important than figures—which are always more or less arbitrary—of complete cures, is, that all of the patients, exception being made of the 7 upon whom I performed a secondary radical operation, have escaped the many miseries of the anticipated menopause. Among these there are no less than 30 who without doubt, according to the generally accepted ideas, ought to have been submitted to a total hysterectomy. Finally, not to render this report too long, I refer for proof to that late assertion in the *Annales de Gynécologie et de Chirurgie abdominale* (Vol. 6, 1902, p. 1) in which 16 of these cases are described in a sufficiently detailed manner to permit of an objective judgment. Among these women there were:

Aged 17 years, 1.

Aged 20 years, 6.

Aged 21 to 25 years, 9.

Aged 26 to 30 years, 8.

Aged 31 to 35 years, 3.

Aged 37 years, 1.

Aged 42 years, 1.

Aged 45 years, 1.

It is here that is found the great advantage, the great superiority of conservative operations over radical operations.

Let us say, finally, a word about the fecundity of those who have been operated upon. When it is a matter of unilateral disease, pregnancy is not uncommon either after abdominal operations or after intervention through the vaginal passage. For the first I refer to the thesis of M. Jarsaillon¹²; for the second to the publications of M. Fraipont⁶ and of M. Goullioud⁹. In this report also the success of conservative operations is incontestable.

Before leaving this third question it is necessary to add some words as to the danger of relapses, a danger which constitutes the great stumbling block for colpotomy. We cannot deny that this danger exists, but it is much less than it was formerly, thanks to the modern technique which is bolder, and above all, more complete. The simple incision followed by drainage can not suffice, evidently, except in the case, somewhat exceptional, of the existence of a simple purulent sac. As soon

as there are several pockets separated by the partitions of the edematous tubal wall, the incision of the principal pocket does not suffice, and renders a relapse almost inevitable. But, when one makes, as advised by Laroyenne, a careful division of all the partitions that the fingers can reach, the chances of cure by granulation are greatly increased. Here and there it will be necessary to perform a second colpotomy very soon after the first, but when once all the pus is drawn off, the diseased tubal walls are found in the best possible condition for a cure, however slightly radical. Evidently this is not and never will be, a *restitutio ad integrum* any more than the majority of cases cured by medical treatment. But, after salpingectomy, after hysterectomy, do we attain that? Even less than by conservative treatment be it medical or surgical.

If a quick relapse, proof of an incomplete evacuation, frequently necessitates a second colpotomy, the later relapses, those which we should call the true relapses, are, on the contrary, quite rare. But even if they were more frequent this would be no great argument against colpotomy. By repeating the same inoffensive operation one can easily conquer these relapsing cases.

A relapse is more frequent in cases of pyosalpinx than in those of hydrosalpingitis. This fact is not in itself surprising, but it must be noticed in order to mark the indications of the different operations and thus to reply to the fourth question.

Among the abdominal operations, the liberation of the tube followed, or not, by salpingorrhaphy will be a so-called accidental operation. It is difficult to imagine a reasonable indication for laparotomy where there is nothing else to do but perform salpingorrhaphy. It will be then principally, if not entirely, in the event of unilateral salpingectomy that one will have occasion to liberate the other tube from its adherences and attach it to the ovary.

The operation of Palmer Dudley, salpingectomy with transplantation of the ovary, will be neither necessary nor possible, save in very exceptional cases. It is, moreover, only an interesting and bold attempt and even its inventor only sees in it a question of choice. But one will do well to remember it when one wishes to perform conservative operations on the tube by the abdominal passage.

The three other operations—resection of the tube, salpingectomy and salpingo-ovaro-syn-desis—will be principally indicated in the non-purulent tubal affections. It is true that tubal resection has been performed in some cases of pyosalpinx and sufficiently acute cases too (Palmer Dudley); but that does not change the fact—as long as one can not be sure that the pus is sterile—that conservative abdominal operations offer

too much hazard to bring them into every day practice. But in cases without pus, these operations are both very benign and often very efficacious.

As for colpotomy, there is first the choice to be made in the place for incision. For a conservative operation which necessitates a post-operative treatment sufficiently long and sometimes quite long, anterior colpotomy seems to me to give a useless and troublesome complication because of the nearness of the bladder to the operating point.

The advantage which lateral colpotomy offers (Stratz¹⁰), in giving access to the tubal collections without opening the peritoneum has little importance now that we know that there is no danger in traversing the cul-de-sac of Douglas to reach the pyosalpinx, even though of very infectious contents, and in opening it. On the other hand the danger of wounding the uterus and uterine artery, incontestable in lateral colpotomy and not existing at all in posterior colpotomy, furnishes a positive reason for the choice of this last method. On this point, I am entirely in accord with those who perform colpotomy a great deal for pyosalpinx. I will only name Dührssen⁶, J. L. Faure⁷, Goullioud¹⁰, Lwoff¹⁴ and De Wasten⁵.

The posterior cul-de-sac once opened, one can make use of the instruments of Laroyenne, or of the bistoury, or of the fingers. The apparatus of Laroyenne seems to me to be superfluous, although it has rendered, and can still render, great service to those who are accustomed to use it. The bistoury perhaps can not be used except in cases where it is possible to render the tumor visible. Whether one employs the trocar of Laroyenne or the bistoury it always will be necessary, in order to obtain a good result, that the fingers enter into the tumor to go in search of the partitions and to tear them, if there is room.

The most simple plan then is to use the fingers from the beginning and employ them also for the perforation of the tubal wall, aiding oneself only with a closed dressing forceps when the wall is too resisting for the fingers. The tubal wall perforated, one tears the partitions that the finger encounters in the tube, makes an antiseptic lavage, and an application of a tampon of iodoform gauze terminates the operation which is extremely simple.

As to the question, what are the tubal collections that can be treated by posterior colpotomy?—the answer is just as simple (Toutes*). In the series of observations which I have published, are found long-

*The only exception to be made is for the large tubal sacs which are found, free from all adhesions, above the brim of the pelvis. But these cases are so very exceptional that it is permissible not to consider them here.

standing affections as well as recent ones, bilateral tumors as well as unilateral ones, chronic cases operated upon as well as acute ones, lesions easily accessible and others situated higher up, small tumors as well as large ones, complicated cases of serous or purulent pelviperitonitis and cases in which the cul-de-sac of Douglas was free from any sign of inflammation.

It is evident that the final result will not be equally good in all the cases, but I have already called attention to that fact and I return to it in my conclusions.

In striking the balance for conservative operations one finds from what has preceded that conservative operations of salpingo-ovaritis offer:

- a. A danger of death which ought to be estimated at 2 per cent. at the most;
- b. Some chances more or less great of not giving complete relief to the patient;
- c. Some chances also of being insufficient and necessitating a second operation either conservative or radical;
- d. The certainty of not procuring for the patient a new malady, under the form of the anticipated menopause.

In comparing this balance with that of radical operations given above, the choice appears to me to be neither difficult nor doubtful and the following conclusions most forcible:

1. Medical treatment suffices in at least one-half of the cases of salpingo-ovaritis.
2. Medical treatment being insufficient or contraindicated, one should *never* at the outset perform a radical operation of any sort.
3. The first operative stage should *always* be posterior colpotomy.
4. When by means of posterior colpotomy it is discovered to be a matter of tuberculous affection, hysterectomy should be performed as soon as possible.
5. In cases of hydrosalpinx which do not yield to repeated colpotomy and which necessitate other intervention, and in cases where one wishes to try and remedy sterility in women, the conservative abdominal operations (resection, salpingotomy, salpingo-ovaro-syndesis) are indicated.
6. Salpingorraphy should be reserved as an accessory operation to a course of laparotomy performed for no matter what other indication.

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TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Stated Meeting, March 10, 1903.

The President, DR. EGBERT H. GRANDIN, in the Chair.

TWISTING OF THE PEDICLE OF UTERINE FIBROMYOMATA.

DR. FRANCIS FOERSTER presented four specimens illustrating this condition, in three of which a peritonitis called attention to their existence; in the fourth, severe hemorrhages. One case emphasized the frequency with which the menopause did not prevent the appearance of later symptoms.

AN ENORMOUS BROAD LIGAMENT CYST.

DR. FOERSTER also presented the wall of such a cyst that had been so large as to completely fill the abdomen.

DISCUSSION.

DR. HIRAM VINEBERG spoke of the frequent appearance of symptoms from fibroids after the menopause, and thought we ought to act without regard to the age of the patient.

DR. S. MARX advocated the removal of such tumors where there were sufficient symptoms to warrant an examination and consequent diagnosis.

DR. JOSEPH E. JANVRIN said that in his experience three out of four cases of fibroids ceased to give trouble after the menopause.

DR. GRANDIN stated that at any period of life, where a fibroid is discovered, irrespective of symptoms, he would advocate its removal.

DERMOID COMPLICATING VAGINAL HYSTERECTOMY FOR COMPLETE PROLAPSE.

DR. G. G. WARD, JR., presented a uterus with marked elongation of the cervix, and a dermoid which he had discovered and removed in the course of the vaginal hysterectomy.

DR. H. N. VINEBERG, although hesitating in general to perform hysterectomy for prolapse before other measures had failed, would carefully distinguish between hernia of the pelvic organs, which even hysterectomy sometimes failed to cure, and hypertrophy of cervix with prolapse of the vaginal walls, which was ordinarily relieved by plastic work and vaginal fixation of the uterus.

ELECTROTHERMIC HEMOSTASIS.

DR. ANDREW J. DOWNES, of Philadelphia (guest) presented his instruments and explained their method of use by means of drawings.

DISCUSSION.

DR. CLEMENT CLEVELAND, having had a large experience with Skene's clamps, and later with the angiotribe, had given up the use of both, except in performance of vaginal hysterectomy, because of the improvement in the preparation of catgut. He thought Dr. Downes'

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...poor
...an outline of the proper
...a more diagnosis would show
...of certain local lesions
...a more careful regard
...as proper exercise, dress, food,
...of better results in therapy.

DR. HIRAM N. VINEBERG, in the discussion, referred to the greater liability of infection from a latent gonorrhea among women, who had suffered from endometritis or endocervicitis prior to their marriage.

DR. G. T. HARRISON spoke of the frequency of infection from latent gonorrhea.

DR. ANDREW F. CURRIER thought that more attention paid to certain points that were offered by the reader of the paper, would be of great value in preventing many diseases that are now only amenable to surgical treatment, particularly malignant diseases.

WILLIAM S. STONE, *Editor.*

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE; SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, March 26, 1903.

DR. L. J. LADINSKI, in the Chair.

SARCOMA OF THE SIGMOID.

DR. SIMON MARX presented this specimen because of its rarity and also from the fact the diagnosis was made before operation from the clinical history.

DECIDUOMA MALIGNUM.

DR. MARX's second specimen was one of deciduoma malignum with a history as follows: six weeks before her admission to the hospital the patient had given birth to a six months' fetus; shortly after this she began to bleed for which she was curetted. During the curettage the hemorrhage was so profuse that she nearly collapsed. The uterus was enlarged and he found a mass inside which he took to be a uterine polyp. This was removed and the patient remained well for three months. Suddenly bleeding started in again and examination showed an open cervix with a large mass in the uterus. A diagnosis of deciduoma malignum was then made. Hysterectomy was performed and the patient did well for one week when she was attacked with a very severe headache and he feared metastases had occurred in the brain. Under appropriate treatment the headache has disappeared and he hopes for a good recovery. The pathologist reported the lesion as superficial.

REMOVAL OF TUBE AND OVARY.

DR. G. H. BALLERAY presented a specimen of tube and ovary removed during the fourth month of pregnancy from a patient who came to the hospital with a temp. of 104° and a pulse of 120, suffering in-tense pain over the uterus and having a watery discharge. On opening the abdominal cavity free pus was found; the pus tubes were removed and the cavity washed out. She made a good recovery and aborted with a macerated fetus two weeks later.

His second specimen was a tube and ovary removed from a patient suffering with gonorrhea. In removing the tube it ruptured and three to four ounces of pus escaped into the pelvic cavity. The cavity was drained with gauze and the patient made a good convalescence.

His third specimen was a uterus removed for complete procidentia with malignant disease of the cervix from a patient 57 years of age. He also reported a case of Cesarean section on a hump-back dwarf in which he used no elastic ligatures to control the hemorrhage.

DR. MARX said that he never used the elastic ligatures in a Cesarean section and very seldom controlled the hemorrhage even with the fingers as the contractions of the uterus took place so rapidly after the removal of the fetus.

A STUDY OF THE DEGENERATIONS AND COMPLICATIONS OF
FIBROID TUMORS OF THE UTERUS.

DR. CHARLES P. NOBLE of Philadelphia read the paper of the evening with the above title, which was published in full in *AMERICAN GYNECOLOGY* for April, 1903.

DISCUSSION.

DR. W. E. POLK thought too much stress had been laid upon the complications sometimes found with fibroid. It is very difficult to believe that carcinoma of the cervix is dependent on a fibroid uterus. The one springs up independently of the other and that these growths tend to carcinoma is not accepted. It seems that the enumeration of appendicitis and carcinoma is outside the pale of the question itself as they originate when a fibroid is not present. As to the tumor itself, certain signs would be looked for before radical measures are taken, such as the size of the growth and whether edematous or myxomatous changes have occurred. If not malignant he thought we were often justified in

waiting until the symptoms of degeneration presented. He hesitates to remove a small fibroid giving no particular symptoms. When the tumor has gained dimensions which makes him apprehensive of its subsequent history, and when it interferes with neighboring organs, it may be well to act. He would be gratified if a direct line of continuity could be shown between the fibroid and complications and the relation between fibroid and sarcoma.

DR. W. GILL WYLIE said he looked upon a fibroid tumor as a new growth having the periods of infancy, youth, old age and death. He could not agree that it should be removed until it gave trouble. In young women if it produces hemorrhage it should be removed. Avoid removal if the woman can have a child. He had succeeded in a number of cases where a fibroid was present and the patients had gone on to full term. Fibroids exist frequently and their presence is not suspected by the patient even as a condition of displaced uterus can exist and give no trouble. Their growth is slow at first, but they may increase in size very rapidly, their mere presence increasing the vascular structures and making any inflammatory trouble more serious. Melancholia and other reflex conditions are apt to arise. There is something in the fact that fibroid tends to degeneration in the other tissues. Cancer more easily attacks degenerated tissue as for example a breast which has been injured. He had one case which he kept under observation for 20 years; the fibroid became degenerated and cancer formed; operation was performed but he could not save the patient. If the patient is over 40 it is safer to remove the fibroid as it will prolong the menopause. Many that menstruate over 50 probably have fibroids and they are more dangerous at this time as they are very prone to degenerate. He could not accept wholly the conclusions of Dr. Noble that all fibroids should be removed; he thought each case should be studied separately.

DR. E. H. GRANDIN thought many of the cases operated on by Dr. Noble were primarily for ovarian cystoma, dermoid, etc., and not for fibroid. When should we operate on a fibroid? If we could say that degeneration would not take place then we might not operate until symptoms presented, but we cannot say that it is not going to degenerate. The practice in the future will be opposite to what it has been in the past. It is safer to remove than delay. A fibroid that is palpable should be taken out and especially at the menopause as degenerative changes occur so readily at that time and if once established the task of removal is much more difficult.

DR. J. RIDDLE GOFFE said he believed every fibroid tumor should

be removed and promptly, to anticipate degenerative changes. Many can be removed by the vagina and the uterus left to gestate. Whenever a patient presents herself with a fibroid she should be advised to have it removed at once; a myomectomy should be done if possible and the uterus left to functionate.

DR. H. C. COE did not hear all of the paper but understood that Dr. Noble referred principally to degenerated fibroids which called for removal and that did not mean all fibroids. As to cancerous degeneration most cases arise from the endometrium. Spindle-celled sarcoma develop especially after the menopause, while the complications of hydrosalpinx and cyst of the ovary are caused by the chronic congestion. The latest researches show that fibroids are formed from an endarteritis and to take out the small growths you only leave lots of others. The position of the fibroid plays a large part in the necessity for its removal and the symptoms to which it may give rise.

DR. H. J. BOLDT said degeneration of the ovaries and tubes may be caused by fibroids and it is often difficult to make the diagnosis of such changes. We may have symptoms which lead us to interfere surgically and we are apt to find the complications accidentally. The location of the tumor is most important and whenever they give compression symptoms they should be removed.

DR. DIXON-JONES has been amazed to see how the tissues of a fibromyoma have been reduced to inflammatory action. From this medullary tissue may come cancer. Every uterus that ever had a fibroid tumor is diseased and its appendages are also diseased.

DR. NOBLE, in closing the discussion, said it was evident there was a difference of opinion in New York. There were two general groups treated of in the paper, the complicated and the uncomplicated. It was shown that the risks were greater from the complications than from the fibroid itself. In cases having no complications 16 to 24 per cent had a condition present which would kill without operation. As to the size of the tumor, it has little to do with it, even the very small ones have undergone necrosis. A patient having a fibroid tumor and presenting no symptoms it had never been his fortune to meet. Dr. Grandin in a general way looks at it as I do, his experience corresponds with my own. No exception is to be made to the subperitoneal fibroid. Dr. Goffe went a little further than I did. Many will operate on other conditions but hesitate to operate on fibroids. It seems as though the force of mental habit prevailed.

CHARLES T. ADAMS, *Editor.*

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL
AND GYNECOLOGICAL SOCIETY.

Stated Meeting, March 6, 1903.

The *President*, DR. G. WYTHE COOK, *in the Chair*.

THE ACTION OF THE UTERUS DURING LABOR.

DR. ELMER SOTHORON read this paper, in which he said that the uterus exerts two kinds of action; *first*, that action which tends to reduce this organ to its original size after having been distended, and the distending cause has been removed. It is termed by writers the tonic action of the uterus. This action is performed by all the fibers of this organ gathering themselves up towards a common center; but more especially by that class of fibers called the "circular fibers;" the other fibers, or longitudinal, not acting with a force equal to the other; hence the lengthened form of the uterus. The tonic action of the uterus can be exerted in various degrees, as it may possess its inherent powers in a greater or lesser state of perfection. It may exist under the following conditions and varieties: 1st, it may act with the most perfect uniformity and success for the purposes for which it is intended; 2nd, it may be impaired so as to act transitorily and feebly; 3d, it may act with force at one moment, and cease the next; 4th, it may act partially—that is, the fundus may contract and the body and neck be flaccid; the body may contract, and fundus and neck be relaxed; the neck may contract, and the body and fundus be in a state of atony; the body and fundus may contract and the mouth be relaxed; when these occur different phenomena present themselves. Writers have admitted the tonic power of the uterus to continue even after visible life had ceased; and however much this circumstance may excite our surprise, or challenge our disbelief, it is nevertheless authenticated by various testimony.

Secondly, the uterus possesses the power of alternate action; this action manifests itself only when attempting to expel something from its cavity; but can never do so, unless the tonic contraction is in a state of greater or less perfection. It never does take place, therefore, so long as the uterus is in a state of atony. This contraction has also been termed the spasmodic, or painful contraction of the uterus as it is, for the most part, accompanied by pain. It is always the effect of stimuli, or mechanical irritation; hence it appears during labor; during

abortion; or in the form of after-pains, to expel coagula or other foreign substances. It must not be supposed that the "labor pains" which declare themselves at the end of nine months in cases of extra-uterine conceptions, form an exception to this rule; for in these cases the decidua is always produced; but at this period it becomes a foreign substance, and uterine contractions are established to expel it. This contraction is almost always attended by pain, but not necessarily; when pain attends, it is not because it is an inevitable consequence of this contraction, but by reason of some change which the muscular fiber has undergone from civilization, refinement or disease. It tends during its best action to diminish the cavity of the uterus, and, consequently, to expel its contents, but its effects are but transitory; the uterus returns to the condition it was in before this contraction took place, and remains quiescent until it is by its proper stimulus again called into action—thus alternating for a longer or shorter period; and now constitutes what is usually called "labor pains." This contraction is most successfully exerted when all the fibers composing the body and fundus of the uterus act simultaneously—for when it acts partially, it is more painful than when the action is general, and never achieves the object it is intended to effect.

So far as we can determine the point it seems that the longitudinal fibers of the body in general, and those of the uterus in particular have more especially felt the influence of civilization, etc., for man is said to have lost much of his original vigor and strength and women suffer from child bearing, while the circular muscles and sphincters appear to have lost nothing of their primitive power; thus the heart and intestines have parted perhaps with none of the original vigor with which from the beginning of the world they were endowed; nor have the several sphincters among which the orifice of the uterus may be justly reckoned, suffered from constitutional abuses.

In the uterus in particular we may observe pretty nearly the same thing—for it is more than probable that the circular fibers of this organ have not deteriorated in the same degree as the longitudinal, nor are they subject precisely to the same penalty, since they may contract with great force without the production of pain. We see this well and satisfactorily illustrated in that condition of the body of the uterus called the hour-glass contraction. This state may continue for hours without being attended by pain.

Some writers upon midwifery make the important operation of the dilatation of the os uteri the effect of mechanical impulse, though many of them, at the same time, are forced to acknowledge they have

seen it dilate where neither the distended membranes, nor any portion of the child had entered its circle, to effect its opening by a wedge-like action. That the waters distending the membranes and the child itself when powerfully impelled by uterine contraction, may occasionally have an influence on this operation, I am not disposed to deny; but if this take place it does not open this part either so kindly, or so effectually, as when this is achieved by the powers intended for this purpose. Before I offer a different explanation of this phenomenon, it will be necessary to consider the different kinds of contractions performed by the uterus. I have classified them as follows:

- a. The contraction of the longitudinal fibers of this organ.
- b. The contraction of the circular fibers.
- c. The simple contraction.
- d. The compound contraction.
- e. The tonic contraction and its effects.
- f. The spasmodic, or alternate, contraction and its effects.

a. THE CONTRACTION OF THE LONGITUDINAL FIBERS.

By the longitudinal fibers of the uterus, I wish to signify those fibers upon the contraction of which the uterus is shortened from fundus to mouth, and which will be in proportion to the effort. The effect of this contraction is to make the contents of the uterus approach its mouth; as this, from its organization, must necessarily be the least resisting part, this tendency will constantly be in proportion to the diminution of resistance, and the force with which these fibers act.

b. THE CONTRACTION OF THE CIRCULAR FIBERS.

By the circular fibers I mean those which are arranged transversely from the mouth to the fundus, and which, by contracting, diminish the capacity of the uterus in the direction of the transverse diameter; and should they act alone, and the os uteri be closed, they would necessarily force the uterus to stretch in the direction of its vertical, or longitudinal diameter. These fibers have, as I shall attempt to prove presently, but an indirect agency in furthering the expulsion of the uterine contents; the action of the circular fibers, especially at the neck of the uterus, is almost in direct opposition to the longitudinal, and serves rather to retain, than to expel the contents of the uterus. It is by the successful and uniform contraction of these fibers and especially those of the neck that the woman is enabled to carry the product of conception to the

full period of utero-gestation. They may act independently of the longitudinal fibers; or they may act with greater force.

c. THE SIMPLE CONTRACTION.

When either the longitudinal or circular fibers act alone "the simple contraction" takes place. It may be asked what evidence have we that one set of fibers may act independently of the other? I answer, we have abundant proof of this in the contractions which take place towards the latter period of gestation; and of which we are made sensible by passing the finger within the os, and placing its extremity against the membranes—a tense and relaxed condition of the membranes is perceived; this is owing to the longitudinal fibers acting alone, for did the circular act at the same time it would be felt by the finger, by the edges of the os uteri stiffening or becoming rigid; but this is not the case.

d. THE COMPOUND CONTRACTION.

This contraction is the effect of both sets of fibers acting simultaneously; this is proved by the mouth of the uterus attempting to close itself during the period of action, and by the head, or presenting part, evidently sinking lower (though perhaps to rise again immediately) in the pelvis. Now, these two circumstances could not happen at one and the same time did not both sets of fibers contract together—it is this compound action which attends the commencement of all healthy or regular labors.

e. THE TONIC CONTRACTION AND ITS EFFECTS.

The tonic contraction or that contraction which tends to diminish the uterus in all directions, cannot be called to any extent into action until the uterus is either in part or altogether deprived of its contents. Whatever will weaken the force of the uterus, or diminish the quantity of its contents, will permit, in that proportion, the tonic contraction of the uterus to take place, if this organ be in a healthy condition.

f. THE SPASMODIC OR ALTERNATE CONTRACTION, AND ITS EFFECTS.

This contraction is often called the spasmodic contraction; but I prefer the term alternate or periodical contraction; for it is not necessarily accompanied with pain.

The cause of these contractions, like the contractions of every other muscle must be a stimulus of some kind or other. I declare my ignorance of what first excites the uterus to contraction at the end of nine months though we are very often enabled to detect it before that period, for it is always found that whatever can stimulate this organ to a certain degree is capable of provoking its action and if not interrupted by proper counter-agents, it goes on until the contents of the uterus are expelled. So much for the causes which may excite the uterus to action; but what is it that gives these contractions their alternate or periodical form? Writers have given us different theories; therefore if I fail to be satisfactory in the one about to be offered, it must be remembered I only hazard an opinion and it will but share the fate of the thousands upon every subject from the time of Hippocrates to the present moment. In order that a muscle may renew its contraction it must by some antagonizing power be elongated after it has become relaxed; in almost every part of the body this power is at once discoverable; but where, and in what resides, that which enables the uterus to repeat its efforts? I am of the opinion this power depends upon its own structure and economy.

What is the effect of the subsequent relaxation? The fibers of the uterus become longer, straighter, and more easily distensible; the large vessels and sinuses are less compressed, and consequently will now permit the natural resiliency of their coats to act—while the influent blood will suddenly fill them, and thus restore the equilibrium which the previous contraction had destroyed. Now, this rapid influx will not only distend the empty vessels, but will also prove a powerful stimulus to the uterine fibers and thus urge them to renew their contraction; and this will be repeated from time to time, until there be no further necessity for its continuance. This plethoric state of the uterus, if we may so term it, is proved by the heightened color of its parietes.

With these facts before us I shall attempt the explanation of the dilatation of the os uteri. At the full period of utero-gestation the process called labor must take place, that the womb may expel its contents; to this important end, its body and fundus must contract while its neck must dilate.

When labor is most easily and naturally performed there appears to be a tacit understanding, if we may be allowed the expression, between the longitudinal and circular fibers; the latter relax suddenly, but so effectually that we cannot discover the agencies by which this is effected. Who has not witnessed the almost instantaneous opening of the os uteri?

DISCUSSION.

DR. H. D. FRY said he found it almost impossible to discuss the many points without an opportunity to read the paper.

Among other things the essayist claimed that the pain of labor is due to the degeneration of the longitudinal muscular fibers. It is inconceivable that a certain set of muscular fibers in an organ should degenerate simply because they run in a certain direction while others do not participate in the process because they run in a different course. Degeneration affecting the muscles of the uterus would be likely to involve the whole organ. Dr. Fry considered the pain of labor due to the degeneration of the nervous system rather than the muscular. Social life of woman tends to increase all nervous affections; the reflexes, hysteria and the motions generally.

The essayist claimed that dilatation is due to the greater strength of the longitudinal fibers overcoming the circular and that the bag of waters has no function in the process. To prove that the circular fibers are stronger than the longitudinal Dr. Sothoron's attention was called to the fact that the uterus lengthens during the contraction. Dr. Fry thought the dilatation is not the result of any antagonism between the two sets of muscular fibers, but that they both act together and by increasing intrauterine pressure the force of the elastic bag of waters is expended upon the weakest part of the wall which is the os. Furthermore, as labor progresses, the muscular fibers are drawn up to the body of the uterus, increasing the strength at this point and weakening it at the os. The round ligaments draw the fundus forward and fix the uterus while the sacro-uterine ligaments tend to draw the cervix backwards and upwards. That the bag of waters acts as a hydrostatic wedge is scarcely questioned at the present day and the advantage of it is familiar to everyone who practices obstetrics. It is a common occurrence for dilatation to progress very slowly when the bag of waters has not formed, and by pressing up the presenting part during uterine action, the fore-waters form and dilatation usually progresses satisfactorily.

DR. A. F. A. KING thought that in such elaborate papers it would add greatly to their merit if the author would formulate some definite conclusions at the end to which especial attention might be directed.

He commended the spirit of speculation and originality that pervaded the paper, and stated his own speculation, which he thought might help along in explaining the muscular action of the uterus, as follows:—

All modern biologists and physiologists recognize a certain similarity between the nervous system and an electrical machine. The brain is the power-house where motor force is generated; the nerves transmit this force, as wires transmit electric currents. This has long been noted and admitted. Yet no one will allow that the force generated in the brain is really electricity. No matter whether it is or not. A name is nothing. Call it electricity or magnetism or vital force or nerve force; this makes no great difference for our present purpose. Some animals, however, do generate real electricity. Familiar examples are the gymnotus which kills its prey by an electric discharge, and electric eels which have been known to kill a horse. The old idea that the vital force of a living being was something specific and different from such manifestation of energy as occurs from chemical and physical changes of matter outside of the body is a mistake. We are fast coming to the conclusion that every process taking place in a living organism is capable of being repeated in the laboratory, and will be so repeated when the knowledge of the experimenter shall have become sufficiently advanced.

To promote this advancement nothing I think is more desirable than for investigators to lend themselves thoroughly and without reserve to the view that the human body is at least a quasi-electrical machine. Let this be our working hypothesis. Should it turn out to be wrong, we can abandon it. Motor power is certainly generated in the brain, and power is generated by the decomposition of metals in an ordinary battery. By what physical force does brain power originate? The two "elements of battery" in the cerebral power-house are *venous blood*, and *arterial blood*. About two years ago I read some experimental demonstrations of this statement, in an article "On the Phenomena of Electricity and Life," by J. Mount Bleyer.* Thinking over the matter one cannot fail to observe that the venous blood is contained in comparatively large spaces—sinuses—while the arterial blood flows in small vessels, both sets of vessels being contained in and surrounded by brain matter, into which the power generated is diffused, stored up and transmitted to such distant parts of the body as may be determined by the will of the individual turning the current "on" or "off" as may be desired. If the two bloods mixed the battery would be spoiled. If the bloods were taken away the generation of power would stop, just as surely as a galvanic battery would cease to generate force when its metals and acid were withdrawn.

We do not yet understand the relative insulating or conducting power of the surrounding tissues and membranes. We cannot yet take

venous and arterial blood into the laboratory and so arrange them, with proper insulation and transmitting apparatus, as to imitate the work of the brain. But the time is coming when this will be done.

Now to return to the uterus, we find in the fully developed pregnant organ, the same arrangement of our two "elements of blood battery," viz.: venous blood, and arterial blood, as we found in the brain, that is to say, large sinuses of venous blood and smaller vessels of arterial blood—the arteries being peculiarly spiral or "helicine." One would almost hope to find running through the coil of an arterial helix, a central core of venous blood, such an arrangement suggesting the evolution of magnetic force, but I know of no such arrangement being actually true.

Assuming, by way of hypothesis, that the two bloods (venous and arterial) are so arranged in the utero-placental circulation as to produce the same power (electric, magnetic, nervous, vital or what you will) as is produced in the power-house of the brain, the conception will help to explain certain phenomena of uterine contraction that have hitherto been puzzling.

In the soft uncontracted uterus, the venous sinuses and arteries are allowed to fill to their utmost capacity, like a battery supplied with its elements; slowly the changes of matter take place by which motor power is produced (no matter whether magnetism, electricity, or both), and when this motor force reaches a certain cumulative degree it is discharged or diffused into the muscular walls when a contraction begins, feebly at first, then more completely, until at the height of the "pain," the sinuses and arteries are *emptied* of their venous and arterial blood; the battery bereft of its elements, stops working; the generation of forces ceases, the contraction relaxes, when again the sinuses and arteries surge with their respective bloods, and power begins to be generated for the next contraction. Thus *the uterus in labor supplies its own motor power*, independent to a certain extent of the nerve power it receives from the central nervous system.

Hence the uterus may go through its contractions after the woman is dead (*i.e.*, when the power-house of the brain has ceased to work) or after the woman has been completely paraplegic. Children have been born under both these conditions.

During the early parts of pregnancy when the "battery" arrangements of the uterus are small, only a little power is slowly generated, but still enough to produce the intermittent contractions, at long in-

*N. Y. Med. Times, Dec., 1899, p. 360.

tervals, that we recognize as a positive sign of pregnancy. During the last lunar month, the power and consequent contractions, become more pronounced, and the woman feels them as painless (inexactly called "insensible") contractions, indicating the near approach of labor. Finally the evolution of power and the consequent more forcible uterine contraction, increase to such an extent, that the sphincter neck of the uterus feels the impact of pressure from the uterine contents; this impression is signaled to the central nervous system, when there is reflected to the uterus coöperating power from the nervous system; thus the power generated in the batteries of the womb and brain, join hands and unite in the culminating effort of parturition, and we say labor has begun.

All this is indeed pure speculation and perhaps too vague to merit scientific consideration. But more may be said in its support. The heart itself with its rushing currents of venous blood on one side, and arterial blood on the other, may constitute another instance of power production. In fetal life, when the heart has less work to do than after birth, the generating power of its veno-arterial battery is *impaired* by the two elements not being kept completely separate—the venous and arterial blood are *mixed*. After birth the closure of the foramen ovale and ductus arteriosus keep the two bloods separate, and the cardiac battery then generates power like the adult heart, without impairment from admixture of the battery elements.

The organs of coition, under excitement (in both sexes), present another example of two sets of vessels gorged with their respective venous and arterial bloods, and with the consequent generation of magnetic or electric power, comes the exalted sensibility of the organs and erotic pleasure. When by the contact of coition, the power is discharged (like a battery) the exalted sensibility disappears, until the event of vascular engorgement recurs. Why it should happen that a dram of seminal mucus in the seminal vesicles, is so potent an element in determining the occurrence of the initial vascular engorgement of the organs, we may not be able to explain. Most of us are too ignorant to understand Marconi's wireless telegraphy, and there are more things in the magnetic fields of venous and arterial bloods than are dreamed of in our limited philosophy.

Some years ago, when discussing "maternal impressions" in this Society,* I ventured to suggest that the umbilical cord itself—even without nerves—might constitute a sort of magnetic link between

**Am. Jour. Obst.*, Sept., 1899, p. 971.

mother and child by which a current could be carried from one to the other. In the vascular arrangements of the cord we find the two umbilical arteries coiled, like a helix, round the vein as a central core. Is a magnetic current thus developed? And if so, are the jelly of Wharton and the amniotic covering of the cord magnetic insulators? These and a host of other questions arise for future investigation and experiment growing out of the hypothesis of the venous and arterial bloods being battery elements, and the whole organism a magneto-electric machine.

J. WESLEY BOVÉE, *Editor*.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Stated Meeting, March 20, 1903.

The *President*, DR. G. WYTHE COOK, in the Chair.

DEATH FROM PULMONARY EMBOLISM AND RESULTING ABSCESS, FOLLOWING AN OPERATION FOR APPENDICITIS.

Dr. I. S. STONE reported this case. The patient, a healthy woman was ill with the characteristic symptoms of appendicitis less than forty-eight hours prior to operation. A small abscess had already formed around the ruptured distal extremity of the appendix which contained a large fecal concretion. A rubber drainage tube was inserted and the patient appeared to be in good condition for recovery.

Fifty hours after operation the patient was suddenly attacked with symptoms of shock and collapse (embolism) but rallied after the administration of three pints of normal salt solution, introduced into the left median basilic vein. Her condition gradually improved after this time, and for several days no very significant symptoms presented themselves. She had, however, some pain in the right side, over the lower lobe of the right lung. Her temperature and pulse did not return to normal as we had expected although there were no signs of peritonitis. On the eighth day after the attack above mentioned, an abscess ruptured into the right bronchus, causing severe dyspnea and collapse; death resulting after less than two hours of severe illness. The first attack, fifty hours after operation was undoubtedly due to pulmonary embolism, while the second was due to rupture of unsuspected pul-

monary abscess. A small amount of clear serum was removed from the pleural cavity with the aspirator, showing that the abscess was located in the lung. Consent was not obtained to make an autopsy.

DR. MILLER said, judging from a case he had seen, this was an instance of septic embolus.

DR. ROVÉE said he was inclined to consider such cases as of lymphatic invasion. This conclusion was based upon autopsies made on a few cases that had died under nearly similar circumstances, though usually a little longer after operation, and upon the fact that the fever and high pulse rate had continued after operation. He believed the secondary focus was present at the time of operation.

CONGENITAL DILATATION OF THE GALL BLADDER AND BILE DUCTS.

DR. G. BROWN MILLER read this paper in which he said that congenital dilatation of the bile passages is an extremely rare condition, only one case having been found by him after careful search of the literature. Oxley (*Lancet*, 1883, ii, 988) reported this one which was briefly as follows:—

A female infant, five weeks old, emaciated, jaundiced, and with an abdominal tumor in the upper right abdomen was seen by him. He aspirated 1080 ccms. of bile and again in a few days 500 ccms. of the same fluid. The child died and autopsy revealed a tumor formed by a dilated common duct the size of a cocoanut. The gall bladder was of normal size but without the cystic duct. The papilla duodenalis was present but the opening was absent. The hepatic duct opened into the cyst.

The case which formed the basis of the paper was as follows:—

A little girl, 2½ years old, had at birth an enlarged abdomen, her girth then being 24½ inches. She developed like other children except the deformity produced by the tumor which caused a marked bulging of the lower thorax and abdomen. The tumor was distinctly cystic, fluctuant, and occupied the whole of the abdominal cavity, except the left flank and a narrow zone in the lower abdomen. It occupied the position of an enlarged liver, was globular with an irregular surface. The child came of healthy parents, and had a negative family history. She had never been ailing, except that the stools had been more or less clay-colored all her life. She had never been jaundiced, the urine had been normal, and when seen her general health seemed very good. She

was operated upon October 11th, 1902 and the tumor was found to be a cyst occupying the position of the liver. Its walls were generally thick with large blood vessels coursing over their surface. The liver was represented by a small thin left lobe and some normal looking liver tissue, the size of a man's hand, situated on the right upper surface of the cyst and separated from the left lobe by a space of 6-7 cms. The attachment of the tumor to the diaphragm was that of the liver, and the round and suspensory ligaments were attached to the upper surface of the cyst. Three litres of bile were withdrawn after the cyst wall had been attached to the edges of the abdominal incision. The operation was done in two stages at an interval of four days. Large quantities of bile discharged through the drain tract for 2 ½ months. The size of the abdomen gradually lessened, it having measured 27 inches in circumference at the operation. At the end of 2 ½ months the opening closed and the bile for the first time since operation seemed to pass normally into the intestine as evinced by the change in the color of the stools from clay to brown, and the lessened size of the abdomen which then measured 21 inches. The general health of the patient is now excellent, and the stools appear quite natural.

The tumor was regarded as a congenital dilatation of the gall bladder and bile ducts. It was thought that the dilatation began in early intra-uterine life and that the malformation of the liver was produced by pressure from the tumor as the liver developed. The common duct was evidently never entirely occluded after birth. The beginning of the trouble could only be surmised, but it was probably either a catarrh of the common duct or a gall stone in the duct near the duodenum. If a gall stone, this had passed along after producing the dilatation. The heavy cyst, by dragging on the common duct, had doubtless perpetuated the condition of partial obstruction.

Discussion.

DR. STONE said he was glad that Dr. Miller had gone into the literature so thoroughly as the condition was evidently a very rare one, Dr. Miller having found but one case resembling his recorded. As no jaundice was present, he was of the opinion that the occlusion was not complete. It was interesting in conjunction with cysts of the liver. Dr. Miller had found but one or two cases of that condition recorded. The relation between these two conditions was not clear yet it probably exists. He thought the diagnosis of such a condition very difficult.

DR. BOVÉE said he thought Dr. Miller's treatment of his case was very commendable and it was one of extreme interest. The opinion expressed by Doctors Miller and Stone that pure liver cysts were extremely rare coincides with his. In 1896 he reported such a case to the Medical Society of the District of Columbia, (*Nat. Med. Rev.*, 1896, VI, 224), and exhibited the specimen which was presented to the Army Medical Museum and which was presumably there now. In that case the cysts were multiple and the mass filled the right half of the abdominal cavity, extending well over into the left side and even into the pelvis. It was fluctuant. The patient, a multiparous widow of 64 years, died and Dr. Lamb removed the specimen at autopsy. He said specimen No. 8955 of the Museum was that of a similar case presented by Dr. Triplett in 1879 without a history. Dr. Bovée thought the differential diagnosis between such a cyst as Dr. Miller described and other cystic accumulations of large size in the abdomen would be difficult. One would have to study very critically the history and the individual case.

DR. ADAMS said the question of diagnosis was important and to him the differentiation between the condition described in the paper and hydronephrosis of one side would be practically impossible.

DR. BOVÉE said such differentiation was determinable to him when segregation of the urine either in the bladder or by ureteral catheterization was added to other evidence. If a catheter could be passed into a hydronephrotic sac it would rapidly empty it of pale urine large in quantity and low in specific gravity. This would be in marked contrast with that from the other kidney. If the sac was not entered the quantity from the affected side would be very markedly less in quantity than from the normal side. Of course in a child of $2\frac{1}{2}$ years the difficulty would be increased.

DR. BALLOCH was interested in the effect of such stagnation of bile in the gall bladder upon the biliary ducts in the liver itself. He believed it would cause pressure atrophy.

DR. MILLER, in closing, said the stools offered practically no evidence of absence of bile permanently, but at times this seemed to be the case. He had not made a positive diagnosis before operation. The little patient has gained markedly in weight and strength since operation and no doubt is supplying the intestine with an abundance of bile.

J. WESLEY BOVÉE, *Editor.*

HENRI VARNIER.

1859—1902.

BY GEORGE J. ENGELMANN, M.D.,
Boston, Mass.

The facts presented are culled from advance sheets of a memoir which is to appear in the *Annales de Gynécologie et d'Obstétrique*, of which Varnier was the obstetric editor. For the courtesy I am indebted to Dr. Hartmann, editor of the gynecologic department.

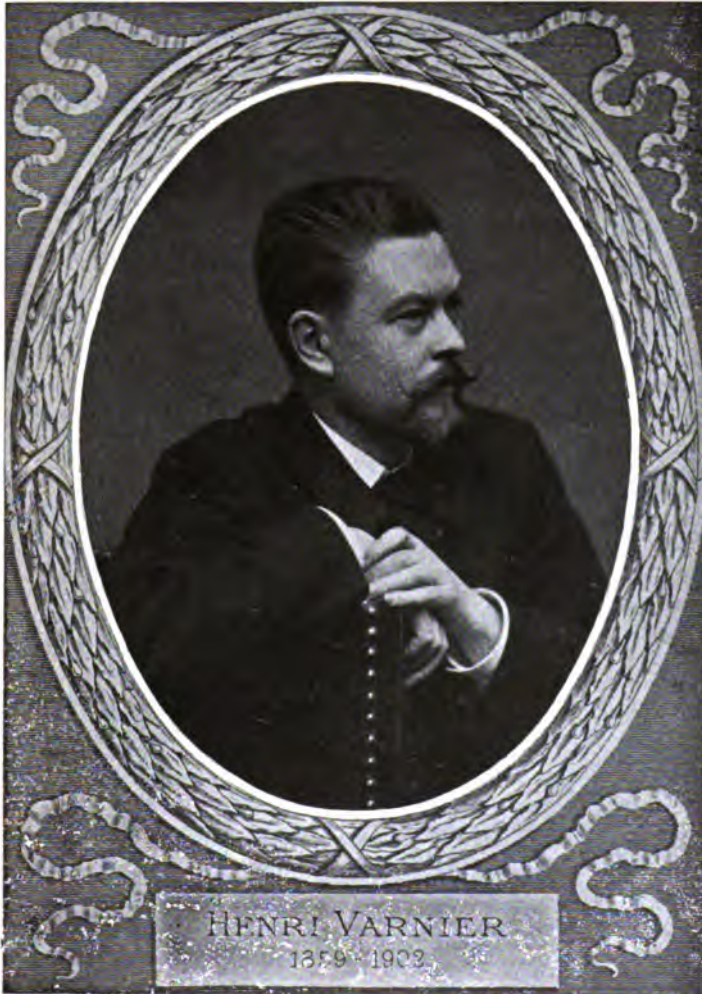
Henri Varnier, the brilliant young obstetrician of the Clinique Baudelocque, who died in December, 1902, passed away all too early for obstetric science: he passed away in the hour of his triumph, with a future replete with promise.

This brainy, enthusiastic student of obstetrics, young as he was, stands out as one of the foremost teachers of this, at the present day, too much neglected science. He was an obstetrician pure and simple, such as there are now but few; with a positive, analytical and precisely anatomical mind concentrated upon this one subject, his life was devoted to the relief of woman's suffering in parturition. Henri Varnier is deserving of more than a passing notice; long since I have wished that his works and his methods were better known to the American profession, and I had intended to give some outline of both in a review of his splendid work, "*L'Obstétrique Journalière*," yet this could be but a hint of what he has accomplished. This promising career has been cut short and now that I am asked to record his untimely end, I will endeavor to convey a more definite picture of the man, his achievements and his ambitions.

Varnier was born in the Champagne, at Epernay, where his father taught at the College, and there he received his preliminary education, entering upon his medical studies at the University of Paris after receiving the baccalaureate. Conscious of his father's limited means, he was unwilling to prove a burden, and determined to make his own way, like so many of the best and strongest men. He soon secured a position as teacher in a school, but ere long the anatomist Farabeuf, recognizing the ability and earnestness of the youth, took him into his own home as tutor to his son, thus relieving Varnier of all financial cares.

The resulting intimacy with Farabeuf did as much to shape the young student's course as did the friendship with Pinard, whose in-

terne he became. It was as student and assistant, later as friend and collaborator to this great teacher, that the obstetric abilities of Varnier developed, but upon the anatomical foundation laid by Farabeuf: it was the influence and example of these two men combined which gave



shape and direction to a career decided upon by the impetuous youth in an hour of deepest sorrow.

Turned from his chosen course as a military surgeon by the death of his mother in childbirth from hemorrhage in placenta previa, after

he had in vain given his own blood for transfusion, Varnier determined henceforth to consecrate his life to the preservation of other mothers from a like fate—to the shielding of other sons from the misfortune which had befallen himself: and nobly did he fulfil the silent vow made at the bedside of the dying mother.

He has done much to advance obstetric science, and upon progressive, ideal lines henceforth to be followed. In his study of the mechanism of labor Varnier departed from the obstetric traditions of the 19th century and the imperfect methods of investigation in use, all based upon digital exploration and clinical observation, and based his work on *anatomical* methods as taught by Hunter and by Smellie. His life had been divided between the anatomical laboratory of Farabeuf and the clinical service of Pinard, which proved a happy combination. With a positive, analytical mind thus practically developed he looked upon clinical examination and exploration merely as a guide, as a pointer, and sought the real solution of the still mysterious question of the mechanism of labor in *anatomy*, in *experimentation upon the cadaver*, and in the study of *frozen sections during and after labor*. He thus returned to the methods of Smellie and of Hunter, who had laid in anatomical study the foundation for a positive obstetric science.

The advanced methods of the present day, and the vast material of the Paris hospitals gave him an advantage he was quick to realize. Braun, Schroeder, and Waldeyer had pointed the way, and upon this Varnier proceeded, favored by the immense material at his disposal.

When, in 1895, Roentgen published his marvelous discovery, Varnier at once foresaw the benefit which obstetric science might derive from the new rays: with Pinard he at once established an X-ray laboratory at the Baudelocque; there *radiopelvimetry* and *radiopelvi-graphy* were born, and another positive method was added to his means for the study of the mechanism of labor. Step by step he progressed from the radiograph of the alcoholic specimen to the fresh *post-mortem* uterus, then the entire cadaver; finally he experimented on living pregnant animals, thus feeling his way until he knew he could with perfect safety throw the rays into the living and pregnant woman. This he did, and the large number of subjects studied and plates preserved made it possible for him to create his method of radiopelvimetry ("Radio-Pelvimetry by Comparison," 1897). After two further years of study, 1897-'99, he succeeded in obtaining in the living subject, at or near term, the fetal head silhouetted in the pelvic inlet, sufficiently clear to judge from the plate of its size, its position, the degree of flexion and engagement.

Finally, in 1900, he was enabled to present to the Paris Academy of Science his method of radiopelviography and radiopelvmetry "at long range." This was one of the happiest moments of his life, when he found that he could at last obtain from the living subject a complete picture of the superior strait, perfect in shape and size, the diameters varying, if at all, only by a few millimetres at the utmost from those of the pelvis itself. Size and shape of the inlet were perfectly represented.

Strange to say, this positive method of pelvic measurement has as yet received but little attention, and seems even unknown in this country. To Varnier it was replete with possibilities. Personally, I was much impressed, more especially as it was my good fortune to be with the enthusiastic student in his laboratory during these days, just as he had perfected his method and demonstrated its accuracy upon the bony pelvis.

His study of pelvic deformity by the X-ray was applied with equal success to an investigation of the possibilities of symphysiotomy; and the same ceaseless energy and unerring anatomical exactness enabled him to formulate precise indications, and to demonstrate positively the favorable results of pubic section.

Varnier was the first to justify the operation for face presentation in the clinically normal pelvis. His report in 1897 to the Congress of Moscow, based upon seventy-six symphysiotomies of Pinard, was the beginning of his work in that direction. It corroborated anatomically what had been clinically observed and placed Varnier with Sigault, Morisani, Farabeuf, and Pinard, foremost among the scientific advocates of the rediscovered operation.

The question of permanent enlargement of the pelvis after pubic section was next agitated, and Varnier, never satisfied with clinical demonstration, sought proof positive. In the absence of *post-mortem* specimens he turned to radiography, and in October, 1899, after prolonged and careful investigation, conclusively proved that a permanent separation of from 3 to 4 c.m., which in certain forms of the deformed pelvis produced "decided enlargement of the antero-posterior diameter of the superior strait and of the transverse diameter of the inferior strait," may exist without serious inconvenience to the solidity and carrying power of the pelvis, without interfering with locomotion or occupation of the individual and greatly facilitating future labors.

Innumerable radiographs of some thirty or more cases taken month by month showed for each case the condition of the pelvis before operation, immediately after operation, then as union is gradually perfected

the status period by period, until a permanent condition is reached; thus positively the results and the processes by which they are attained are shown.

Much as Varnier has accomplished in his strenuous life of but a little over two-score years, more yet was promised. As a teacher for the student and for the obstetrician he was preëminent. His teaching was positive, by demonstration: the course of labor and its mechanism was clearly shown by frozen sections, by radiographs and charts, and this material for teaching, great as it is, he had hoped to complete to perfection. Even in the early part of his career, while engaged on his anatomical work with Farabeuf, he collected, as collaborator of Pinard, *post-mortem* specimens from the immense Lari-boisiere material, at the same time utilizing other hospitals and gathering in the Laboratory of the Baudelocque a large mass of valuable material from all sources, which was to form the nucleus for a Museum of *Obstetric Pathological Anatomy* with which he had hoped to endow Paris.

Of his works, which all deserve to be more widely known, I can but call attention to the more important. His thesis (Paris, 1888) on "The Lower Muscular Strait of the Obstetric Pelvis," shows that this strait is formed by the fibers of the *levator perineo coccygei* (*levator ani et ischio-coccygei*). In 1892, appeared the "Normal and Pathological Anatomy of Obstetrics," by Pinard and Varnier, a work with an atlas of superbly executed plates and a text which, in addition to a complete description of the illustrations, contains two memoirs on "The Delivery and Engagement of the Fetal Head in the Normal Pelvis"; this work is looked upon as epoch-making in the history of French obstetrics. Of a further series of anatomical studies, only fragments have been published. In 1891 appeared the "Introduction to the Clinical and Practical Study of Labor," by Farabeuf and Varnier, demonstrating the fundamental principles of obstetrics as verified or proven by experiments in the normal anatomical manikin and by observation on the parturient. His lectures have in part been gathered in a book which is essentially individual and characteristic, "L'Obstétrique Journalière" (Every-Day Obstetrics), in which the course of normal labor is depicted, and of which the Nestor of French obstetrics, Hergott, says, and justly, too, that it will remain our "scientific evangelium" in all that pertains to normal labor.

His publications are individual, a happy departure from the traditional text-book, and will richly repay the American reader for the time

their study may take. They distinctly reflect the man and his marked personality.

This personality of the youthful master impressed itself upon all who came in contact with him—tall, spare, distinguished in carriage and bearing, serious in manner, with an open, frank eye reflecting at times the earnestness of his work, and again his gentleness, his goodness of heart and tenderness of disposition.

At the height of his career, in the knowledge of success achieved, he passed away in the bloom of maturity, to the sorrow of all who knew him, students, patients, friends and colleagues.

In his last months, family affliction had been added to his suffering from cardiac disease, and physical exertion had become impossible, but the energetic worker would not rest, and now turned his attention to historical research. Even when confined to the bed or lounge he persisted in the study of his beloved science, until he passed away all too soon for the obstetrical world, at Costebelles, a small southern resort he had sought for the benefit of his health.

IN MEMORIAM: DR. T. GAILLARD THOMAS.

At the meeting of the New York Obstetrical Society, held April 14th, 1903, the following resolution upon the death of Dr. T. Gaillard Thomas, presented by the committee appointed at the last monthly meeting, was adopted:

In paying its tribute of respect to the memory of T. Gaillard Thomas, the New York Obstetrical Society takes pride in the thought that he was one of the founders, several times its President, and for many years one of its most active and honored members. It is a pleasure to recall the various incidents and upward steps in his career, how he came to New York a poor young practitioner without friends, and with hardly an acquaintance, and how, by sheer ability, he soon made himself felt, and left the impress of his personality wherever it was his destiny to labor.

In his day he was a leading authority on all Gynecologic and Obstetric subjects. As an operator, he was *facile princeps*. He was not only theoretically the master, but his technic was unexcelled.

Who, that listened to his lectures, was not impressed with the forcefulness of his style, and the breadth of his erudition?

He has passed from among us, having reached the forefront of professional eminence, satisfied and content, and rich in the rewards and honors of his career.

It is proposed that these words be entered upon our minutes, and a copy be sent to the family and the medical journals.

CLEMENT CLEVELAND,
J. E. JANVRIN,
GEO. TUCKER HARRISON.

BOOK REVIEWS.

DIE NABELPFLEGE DES NEUGEBORENEN IN DER PRAXIS. By DR. C. KELLER, Berlin. Carl Marholm, Publisher, Halle, 1902. 35 pages.

This monograph of 35 pages on the care of the umbilicus of the new born can be highly recommended to the general practitioner. The importance of a rational treatment of the severed umbilical cord and the relationship existing between local affections of the umbilicus and the mortality of the new born is best illustrated by contrasting statistics from the pre-antiseptic era and those made after the introduction of anti- and a-sepsis. Thus the mortality in the maternity in Prague fell from 30 per cent in 1875 to 5 per cent in 1888. But while the German university clinics and governmental maternities are constantly striving to improve the methods of care for the umbilicus in the new born, the busy general practitioner is far from devoting the necessary attention to the avoidance of umbilical infection. Ordinarily, the care for the umbilicus is left to midwives and nurses who sin only too frequently against the rules of surgical cleanliness and who consult the physician only when quite extraordinary conditions exist. Furthermore, it is not generally appreciated that slight disorders of the umbilical wound may constitute the origin of general infections, and that such general infections may even take place in cases in which the umbilicus has undergone an apparently normal process of healing.

In order to avoid all untoward consequences, the author calls attention to a number of points of practical interest. Hemorrhages from the umbilical cord may occur, as a result of insufficient ligation, several hours after birth. The attending physician, therefore, should control the umbilicus for at least two hours after confinement. As a good prophylaxis against after-hemorrhage, the respiration of the new born should be incited from the very beginning of extrauterine existence. The section of the cord at the proper distance will materially aid the physiologic mummification of the umbilical stump. After reviewing the two modes which, at present, compete in the treatment of the remnant of the umbilical cord, those of Ahlfeld and Martin, the author considers the method of the former the better for the general practitioner. The after-treatment employs antiseptics with advantage. Following Ahlfeld's suggestion, the author touches the umbilical cord with alcohol at each change of the dressings. The child should be bathed daily, and the dressings changed at this occasion, otherwise only when the dress-

ings are contaminated with urine. Twins are treated in the same manner. The healthy child is, of course, cared for previous to the sick one. Nurses, both trained and untrained, must be instructed that the umbilical wound not only needs the greatest cleanliness like any other wound on the surface of the body, but requires particular care as an infection of the navel is prone, to a very high degree, to produce a fatal general infection.

GEORGE GELLHORN.

DOKTORSFAHRTEN, AERZTLICHES UND MENSCHLICHES. By MAX NASSAUER. F. Enke, Publisher, Stuttgart, 1902. 139 pages.

This little book is fully entitled to a review in this journal. Its author is a gynecologist who has written several valuable contributions to our science. But it is nothing gynecologic that he presents us in this his latest work. He tells us of the hardships and meagre pleasures of a general practitioner in a small village in the Bavarian mountains and exhibits a remarkable talent as a narrator. Whether he speaks in a humorous tone or in poetic accents—we see clearly before us the country and the people that he pictures. Some idea of the quite unusual variety of themes covered in this little volume may be gained by glancing over the table of contents. The true lover of Nature cannot but welcome the poetic feeling as exhibited in "This is God's world." Genuine pathos do we find in the death bed scene so simply and yet, so tenderly sketched under the caption "The Flies"; while "The hot glue on the toe of the Honorable" affords a strain of genuine humor. The perusal of this book holds our interest and our sympathy from the first to the last page, and we recommend it highly to anyone who wishes to spend an idle hour with a pleasant companion.

GEORGE GELLHORN.

INDEX OF CURRENT LITERATURE.

J. WESLEY BOVÉE, M.D.

CHARLES S. WHITE, M.D.

GEORGE K. BAIER, M.D.

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3. American Journal of the Medical Sciences. Philadelphia.
4. American Journal of Obstetrics. New York.
5. American Medical Compend. Toledo, O.
6. American Medicine. Philadelphia.
7. American Practitioner and News. Louisville.
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9. Annales de Chirurgie et d'Orthopédie. Paris.
10. Annales de Gynécologie et d'Obstétrique. Paris.
11. Annals of Gynecology and Pediatrics. Boston.
12. Annals of Surgery. Philadelphia.
13. Archiv für Gynäkologie. Berlin.
14. Archiv für Klinische Chirurgie. Berlin.
15. Archives de Neurologie. Paris.
16. Archives Provinciales de Chirurgie. Paris.
17. Archivio di Ostetricia e Ginecologia. Napoli.
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27. Bristol Medico-Chirurgical Journal.
28. British Gynecological Journal. London.
29. British Medical Journal. London.
30. Brooklyn Medical Journal.
31. Buffalo Medical Journal.
32. Bulletin de L'Académie de Médecine. Paris.
33. Bulletin of the American Academy of Medicine. Easton, Pa.
34. Bulletin of the Johns Hopkins Hospital. Baltimore.
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36. Bulletin Société de Chirurgie de Lyon.
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105. Medical Mirror. St. Louis.
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ABSTRACTS.

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OBSTETRICS.

Experiences with Bossi's Dilator.

WAGNER (*Centralbl. für Gynäkologie*, 1902, No. 47), reports 3 cases in which he used Bossi's dilator. He prefers the oblique position for the patient, as the most satisfactory for the manipulating of the instrument after its introduction.

As the instrument lacks the pelvic curve it is advisable to raise the buttocks of the patient to permit the same to be pressed toward the anus. He introduces the dilator as one would a sound without the use of a speculum, first catching the anterior lip of the cervix with a tenaculum.

While the fingers of one hand introduced into the vagina control the dilator, the other hand manipulates the lock, an assistant turning the screw.

Case 1.—Patient, aged 29; V-para. A year and a quarter ago had anterior colpotomy performed upon her with removal of the left adnexa on account of chronic salpingo-oöphoritis. Now pregnant at term. Pelvic measurements normal. For five days had had pains of variable intensity. The cervix has been dilated to the size of a half dollar for the last three days. Patient exhausted from ineffective pains. Bossi's dilator was then applied without an anæsthetic. Slowly opening the dilator, the extremely nervous woman complained of slight pain. Within 30 minutes the cervix was completely dilated. The membranes were ruptured when the indicator pointed to IX. Hemorrhage was small. No albumen. Tarnier's forceps were then applied upon the movable head and extraction followed. Placenta passed immediately. Uterus contracted promptly; child weighed 3000 g. Puerperium normal.

Case 2.—Patient, aged 45; IV-para. All her labors were difficult and the children, which were abnormally large and all cross presentations died during birth. Pelvis slightly contracted. Twice before she was overdue and this time was six days over her time. Child seemed to have grown considerably during the last two weeks and on this account premature labor was induced. No pains, cervix intact; position of child, second dorso-anterior cross; fetal heart good.

The curettage of the uterus has almost always given satisfactory results, but in the caustic treatment of ambulatory patients the results have not been so gratifying.

Of late years the writer has used chloride of zinc extensively with the result that weak solutions require frequent applications and seldom go deep enough, while strong solutions are often followed by undesirable after effects.

A thick slough remains, which may easily be the starting point of a general infection. It is at this point that formalin possesses its great advantage and is the reason for recommendation by Menge as a desirable medicament.

It does not act, even in strong solutions, as a caustic or destroy like zinc chloride; it simply permeates the tissue. It is a much better bactericide than zinc chloride, and has never been followed by any of its unfavorable results. Applications have been made as frequently as five days, while seven days are recommended. As regards the number of applications, ten have been the limit, and it is suggested that if no cure is effected by that time some other line of treatment be followed. The strength of the solution as recommended by Menge is 30 per cent. and 50 per cent. The weaker solution was soon abandoned since the stronger did not produce any more unpleasant symptoms, and less frequent application was necessary.

Formalin may be applied by means of cotton wound upon an applicator. The author recommends Playfair's sound, while Menge recommends an uterine syringe.

Formalin is contraindicated when the os is very small, and in decidual or hemorrhagic endometritis.

In decidual variety it does not remove the bits of decidua, while in the hemorrhage variety it may produce severe hemorrhage. In both varieties the proper treatment is curettage. The use of formalin has been followed by rather severe pain and sometimes hemorrhage, but never by the alarming symptoms which frequently accompany the application of zinc chloride. Furthermore a lasting damage does not result from the application of formalin, while the treatment may be supplemented by curettage.

Its use has been productive of unquestionably good results and frequently complete cures have followed.

A. S.

AMERICAN GYNECOLOGY

VOL. II.

JUNE, 1903.

No. 6.

THE CONSERVATIVE OPERATIVE TREATMENT OF CHRONIC INVERSION OF THE UTERUS.*

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Mich.

The problem of successful reposition of an inverted uterus is almost entirely one of mechanics. Reinversion is rendered difficult by excessive contraction of the parts in the neighborhood of the cervix. Through this constricted and unyielding inversion ring, it is found difficult, and at times impossible, to force the uterine body, whose diameter is decidedly greater than that of the ring. Obviously, these two diameters must be made more nearly equal before reposition can be accomplished. Reduction in the size of the uterine body is impracticable since its position within the vagina prohibits the use of elastic or other pressure. Even if this reduction could be accomplished, the manipulations necessary for reposition would allow of a return to the original condition. Treatment then must be directed towards increasing the diameter of the inversion ring, either by pressure exerted from within outwards or through incision of the pillars of the ring.

Naturally, as is the history of all modes of treatment, the non-operative methods were first given a trial in the effort to effect a cure of the inversion. The uterus was pushed upward in the vagina, and attempts made by various forms of taxis to reduce the malposition. Some endeavored to make the part that came out first the last to return through the ring. Others endeavored to indent one horn of the uterus first, and after this had been pushed through the ring, to follow it with the other

*Read March 17, 1903, before the Boston Obstetrical Society.

norn. Various methods of pressure from below were tried in the shape of packing, air pessaries and water colpeurynters. Instruments were used to replace the hands, which soon became benumbed from continued pressure from the vaginal walls. It was soon seen that one obstacle to the dilatation of the inversion ring lay in the difficulty of securing counter pressure. As pressure was made upwards on the fundus, the whole organ, including the ring, was carried upward and no purchase could be secured for dilatation. To obviate this difficulty counter pressure was made over the abdomen, blunt plugs were placed so as to press into the opening as it was forced upward. The cervical ring was held downwards by instruments while upward pressure was made on the fundus. Tate even went so far as to secure counter pressure by passing two fingers of one hand into the rectum and over the ring, while the opposite side of the ring was reached by the forefinger of the other hand by way of the urethra and bladder. Upward pressure was secured by manipulation of the fundus by the thumbs.

Sometimes these methods were successful, especially if the case was comparatively recent and the ring readily yielding. More often, however, they were dismal failures and the patient was left to get along as best she could, or the uterus was amputated as a last resort.

Nor were these methods devoid of danger. Laceration and even rupture of the uterus, wounds of the vagina and injury to the pelvic soft parts occurred as a result of the violence employed and not infrequently were followed by death.

It is not strange that in the presence of such poor results, certain bolder minds should have chosen the other horn of the dilemma and considered how best the constricting ring might be loosened by incision. To Marion Sims is usually given the credit of first suggesting incision of the cervix as a method of treatment of inversion, but I find that Aran antedates him by some years. This latter author in his text-book published in 1858 states that he would advise, in cases where the rigidity and induration of the cervix prove an obstacle to the reduction of an inverted uterus, the employment of multiple cervical incisions. This method of treatment he preferred to amputation, which had been very unsuccessful in his hands. However, he does not seem to have carried out his suggestion in any given case. The latter statement applies also to Sims, who in his book, "Uterine Surgery," advises, like Aran, longitudinal incisions from the external os along the cervix to a point beyond the internal os, for the purpose of facilitating the process of reduction. He suggests that at least three incisions be made, one on each side, and one posteriorly. He distinctly states that the object of the incisions

is to divide the circular fibres of the uterine tissue and thereby remove one of the principal barriers to the reduction of the fundus.

Three years later Robert Barnes made use of this method in a case of an inversion of six months' duration. He made three longitudinal incisions into the cervix in order to relax the circular fibres. Taxis was then applied and quickly succeeded.

J. M. Duncan used practically the same method on two cases with successful results in one case but with failure in another.

It is easy to understand why, in the days in which these incisions were employed, success would not be apt to crown every attempt. Surgeons were fearful of opening the peritoneal cavity, and for that reason probably the incisions were too short and not deep enough. Too deep an incision meant opening into the peritoneal side of the uterine concavity with resulting sepsis and an extension into the pelvis and abdomen. Recently, Hirst has employed cervical incision successfully in a case of chronic inversion of three months' duration. The cervix was cut in two in the median line posteriorly, the incision being carried higher on the internal surface. The peritoneal cavity was not opened. The uterus was inverted easily and the operation completed by suturing the cut cervix.

It remained for an American gynecologist to set at naught this fear of the abdominal cavity and to attack the inversion ring from the peritoneal side through an abdominal incision. In 1869, T. Gaillard Thomas reported a case where, after all known methods of reduction of an inverted uterus had been attempted and failed, he had been able to restore the uterus to its normal position by a dilatation of the inversion ring through a median laparotomy incision, aided by pressure on the fundus from below. The dilatation was accomplished by a steel dilator. The difficulty of the application lay not so much in the dilatation of the ring as in its rapid contraction after the instrument was removed. So much force had to be employed from the vaginal side, that the operator's finger passed through the vagina into the peritoneal cavity between the uterus and bladder. A second case where the operation was performed upon an exsanguinated patient, proved fatal. Thomas is careful to point out that the abdominal method is not offered as a method of treatment of inversion of the uterus except in case of last resort and as a substitute for amputation.

The method, although successful in one case, was not favorably received by the profession. In the fifth edition of his text-book Thomas states that he would have omitted it entirely from the text had he not

been convinced that in the future it would receive more favorable consideration and prove of real value.

In 1885 Malins, and in 1888 Mundé reported failures by this method. The former was able to dilate the ring by means of a glove stretcher but could not reinvert the uterus. Mundé even failed in the dilatation of the ring. In both cases the uterus was removed subsequently by the elastic ligature.

After a careful search through the literature, I have been able to collect 15 cases of Thomas' operation for chronic inversion of the uterus. In some instances the original technique has been somewhat modified, either through design or because of the exigencies of the case. There were two principal modifications. After dilatation of the inversion ring pressure upwards on the fundus was reinforced by upward traction on the tubes and round ligaments. After vain efforts to reinvert the uterus, the pillars of the ring were cut intra-abdominally either on the anterior or posterior surfaces or both.

Of the 15 cases of inversion treated by the abdominal route, 8 were successful (Consentino [2], Cushing, D'Antona, Everke, Haultain, McIntosh, Thomas). In three of these, however, reposition was accomplished only after incision of the ring (D'Antona, Everke, Haultain).

There were 7 complete failures where this method was adopted (Frankenthal, Kelly, Küstner, Malins, Mundé, Spinelli, Thomas). In 4 the operation was completed by amputation or removal of the uterus, in 2 the details were not given and in one the result was fatal. The reasons for this poor showing will be considered later on in connection with the discussion of the relative merits of the abdominal and vaginal routes.

To another American gynecologist belongs the credit of devising a most rational and safe method of overcoming the contraction of the inversion ring. The method proposed and executed in one case by B. B. Browne was as bold in its way as was the method of Thomas, and was much safer. The operation consisted in making an incision, one-and-a-half inch in length in the posterior uterine wall. Through this incision a Sims vaginal dilator was passed into the ring for the purpose of securing dilatation, which was completed by the use of Hank's rubber dilators. The incision in the uterus was now sutured with silk worm gut, after which the fundus was replaced easily. Browne claimed that this operation was not more dangerous but more certain than prolonged or rapid taxis. It also did away with the danger of bruising the tissues and rupturing the vagina and as an operation for inversion it was less dangerous than laparotomy.

Browne's operation, although carefully worked out and based upon good scientific principles, apparently did not meet with the endorsement of the profession, since I am unable to find another case where exactly the same technique was employed. It was the starting point, however, and paved the way for Küstner's operation, the description of which appeared in 1893.

Before discussing this operation, it would be well to mention the operation for inversion suggested in 1888 by Polk. In the discussion of Mundé's paper on inversion in which he reported his unsuccessful case by the Thomas method, Polk advised an incision through the utero-vaginal junction and the cutting of the cervical constriction, laying open the entire cervix, if necessary. The idea was to avoid entering the peritoneal cavity if possible, although he points out that even in this event, the danger would not be greater than from a laparotomy. He seems, however, to have had no opportunity of putting his method into practice.

Küstner's operation differed from Browne's in that he made first a wide transverse incision of the posterior cul-de-sac; second, the posterior uterine wall was excised from 2 centimeters below the inverted fundus to 2 centimeters above the external os, an incision much longer than that advised by Browne, who wished only space enough to dilate the ring. After reinverting the uterus, the incision in its wall was closed by deep and superficial sutures passed from the peritoneal side. The final step in the operation consisted in the suturing of Douglas' cul-de-sac. The reason why in some cases operated upon by this method, dilatation of the inversion ring could be dispensed with and still reposition accomplished, was because the incision extended quite well towards the external os, thus cutting certain of the constricting fibres. But it was soon found that in certain cases it was necessary to extend the incision downward until the entire cervix was divided in the median line before the inversion could be reduced.

This modification was suggested by Piccoli in 1894 and was first put into execution by Morisani in 1896. Spinelli, for reasons to be considered later, opened the anterior cul-de-sac by a transverse incision and split the anterior uterine wall in the median line from the external os to the fundus. After reinversion the uterine incision was closed by interrupted catgut sutures and the uterus held forward by vaginal fixation.

It remains to speak of one other modification, that of Kehrer. He split the cervix in the median line up to the centre of the uterine body without opening the vesico-uterine pouch. Then the fundus was pushed up and partially reinverted. From the peritoneal side the uterine

incision was sewed up to the internal os. Then the reinversion was completed and the remainder of the incision sutured from below. I have been unable to find anyone who has adopted Kehrer's technique.

My personal experience with inversion of the uterus is limited to two cases.*

Some ten years ago I was called in consultation by Dr. G. K. Johnson of Grand Rapids, Mich., in the case of a young woman with inversion of the uterus, of two months' standing. She had flowed excessively and was pale and weak. Several ineffectual attempts were made to replace the uterus by taxis, after the administration of chloroform. After each effort at reposition the patient was weaker from loss of blood, accompanied by considerable elevation of temperature. I had a cup-shaped repositor made and endeavored to reinvert the uterus by gradual elastic pressure with abdominal counter pressure. Every attempt to dilate the unyielding inversion ring proved futile. My suggestion of Thomas' operation not meeting with the approval of either the patient or her family, the case passed out of our hands.

Cases of chronic inversion of the uterus are not very commonly met with even by specialists with large consultation practices. Ten years elapsed between my first and second cases. The second patient was referred to me by Dr. A. B. Haggadorn of Lansing, Michigan, and entered my service at the University of Michigan Hospital, October 21, 1902.

The patient was an American aged 26 and married three years. Her family and personal histories were negative. Her menstruation first appeared at the age of 12 and up to the time of her present trouble was entirely normal. Her first confinement occurred about fifteen months before her entrance to the hospital. It was rather an easy labor and was terminated by forceps, the instruments being applied only about five minutes. She does not remember about the delivery of the placenta and felt nothing give way. She flowed very profusely and was given a brown medicine, presumably ergot. The patient stopped flowing soon after the completion of the labor and there was no further flow until the seventeenth day, at which time she had been up and about the room for a week. Two weeks later she consulted her physician who told her there was something wrong with her womb. He made a number of unsuccessful attempts to "fix it." She nursed her child for nine months, flowing regularly every twenty-eight days. Although the flow was profuse, it was not excessive until last May. Since that time

*These cases were reported at the January 16, 1903, meeting of the Chicago Gynecological Society. See *AMERICAN GYNECOLOGY*, 1903, ii, No. 2, p. 154.

she has lost more and more blood at each period until she became so weak she could scarcely walk.

I first saw the patient September 11, 1902. She was exceedingly anemic, but as she was to enter the hospital on the following day I made no blood examination. Vaginal examination showed a typical inverted uterus with rather a small fundus, situated about one-and-a-half inches within the introitus. High up in the vagina could be felt the cervical lips, forming a complete collar or rim at the extremity of the uterus. By bimanual examination, the forefinger could be forced into the constriction by depressing the abdominal wall. The slightest manipulation of the exposed mucous membrane gave rise to considerable hemorrhage.

For certain reasons the patient was unable to enter the hospital until nearly six weeks after this examination. During the interim she passed through a menstrual period and lost an enormous quantity of blood. Her appearance was ghastly; there was dilatation of the heart and marked tachycardia. An examination of the blood showed only 25 per cent hemoglobin, 1,530,000 reds and 8,800 whites. The pulse ranged from 140 to 150 beats per minute. The patient was seen in consultation by my colleague, Dr. Dock, who took charge of the medical treatment, as it was evident that her present condition did not warrant any surgical interference. Under the proper treatment, the patient's general condition improved markedly and at the time of the operation, two weeks later, the percentage of hemoglobin had been raised to 55 per cent.

Operation.—(Figs. 1 to 5.) The usual thorough disinfection of the vagina by the use of hot water and green soap necessarily had to be omitted in this case, since severe hemorrhage followed any manipulation of the inverted uterus, and the patient was in no condition to lose any blood unnecessarily. Every other antiseptic detail, however, was carried out and the vagina was made as aseptic as possible by bichlorid douches.

The inverted fundus was grasped with the volsella and pulled forcibly outwards and downwards. Another volsella caught the anterior vaginal mucosa in the median line just above the anterior lip of the cup and pulled it sharply upwards. Through the vaginal mucosa thus rendered tense was made a transverse incision some two and a half inches in length. In order to avoid opening the bladder, this incision was made as close to the cervix as possible. The vesico-uterine peritoneal pouch was opened, the cervix exposed and divided between two volsella. This incision was carried upwards in the anterior median line of the uterus to within one-third inch of the fundus. The inversion was now

reduced easily, the fundus going upwards and each half of the divided cervix being carried through half the arc of a circle and finally meeting so that the two halves formed a complete cervix situated downwards, not upwards. I now adopted Taylor's suggestion and removed a wedge-



Fig. 1—Showing the inverted uterus drawn downwards, the anterior vaginal wall made tense by upward traction with forceps. Vesico-uterine pouch opened by transverse incision just above anterior cervical lip.

shaped piece of the bulging uterine wall on either side of the incision. This was done to enable the retracted peritoneal edges to come together.

The uterine incision was next closed by a continuous catgut suture.

The needle was passed from the peritoneal surface down to, but not through the uterine mucosa. There was some gaping in one or two places, in spite of the utmost care to bring together the peritoneal edges. An unsuccessful attempt was made to close these spaces by interrupted



Fig. 2—Anterior cervical lip made tense by forceps at either angle pulling outwards. Finger can be inserted through incision and into ring to act as guide.

sutures, but the stitches tore through the uterine wall when much tension was placed upon them. A cat-gut suture was passed around each round ligament close to the uterus and each end passed through the anterior vaginal wall and tied after the fundus was returned within the pelvic cavity. This brought the line of incision in the anterior uterine

wall up against the bladder peritoneum, at the same time giving support to the fundus, which had been prolapsed for months. A small strip of gauze was placed to the left of the median line between the bladder and uterus and another small gauze drain left in the uterine cavity.



Fig. 3—Cervix and body of uterus split open. Shows tubes and round ligaments passing downwards to fundus. Ovaries lie above.

The patient lost but little blood during the operation, practically none after the reposition was accomplished.

There was a sharp rise of temperature and pulse the day following the operation but there were no accompanying signs of sepsis and the patient looked and felt well. The temperature and pulse gradually

fell to normal, the patient made an uninterrupted recovery and left the hospital January 1st, 1903.

Examination at this time showed the uterus forward, movable and two-and-three-quarter inches deep. There was no pelvic tenderness.



Fig. 4—Uterus has been reinverted. Cervix has been carried downwards, fundus upwards. Wedge-shaped piece taken from each side of incision to allow of peritoneal edges coming together.

Microscopic examination of the wedge-shaped pieces of tissue, including small portions of the mucosa removed from the uterus, showed an increase of connective tissue in the muscularis with sclerotic changes in the blood vessels. In the meshes of the fibrin deposit on the mucosa were to be found cell debris and leucocytes.

I have since heard from the patient and she is enjoying the best of health. She has passed through one normal menstrual period.

For the purpose of comparison, I have collected from the literature all cases of chronic inversion of the uterus, where the latter was incised through the vagina. For the sake of clearness these operations may be divided into four groups:--

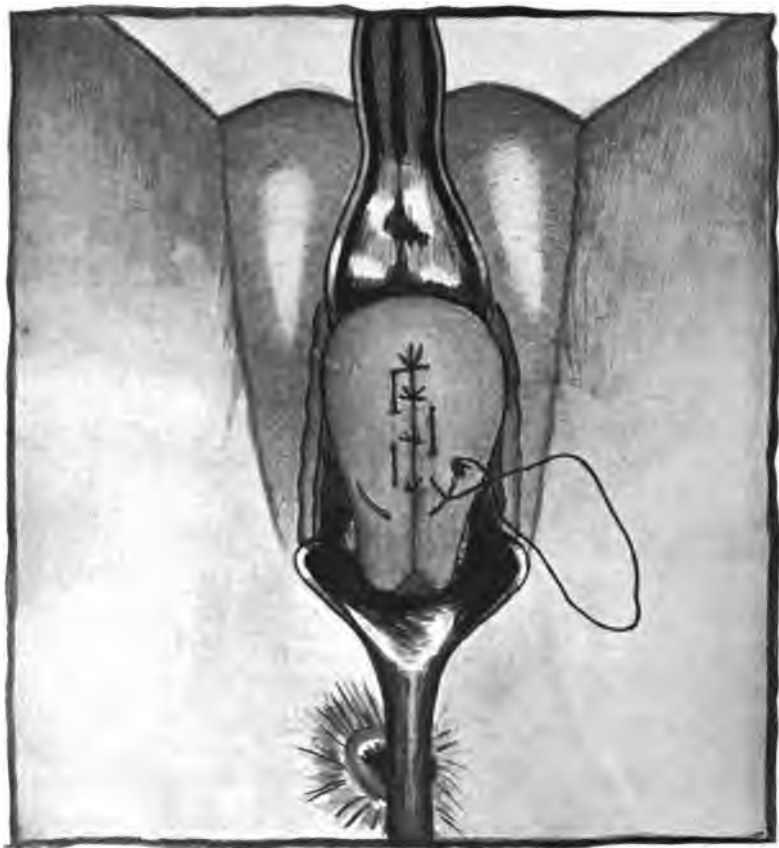


Fig. 5—Line of incision brought together by continuous and interrupted sutures. Fundus then replaced within the pelvis through transverse incision, which is closed except a small opening for drainage.

1. *Partial Posterior Colpohysterotomy* (Küstner's operation). Incision through the posterior uterine wall from just above the external os to just below the fundus. Six operations with 4 successes (Küstner

[2], Perlis, Von Jordan) and 2 failures (Salin, Weber). In the last two cases amputation of the uterus was employed as a last resort.

2. *Complete Posterior Colpohysterotomy* (Piccoli's operation). Incision through the posterior uterine wall from the external os to the fundus.

Twelve operations with 11 successes (Borelius, Duret, Graeve, Heinrichus, Küstner, Morisani, Netzel, Pruntsi, Sava, Westermarck, Von Ott) and one failure (Josephson).

3. *Partial Anterior Colpohysterotomy* (Kehrer's operation). Incision through the anterior uterine wall from the external os to the centre of the fundus. One operation, success (Kehrer)

4. *Complete Anterior Colpohysterotomy* (Spinelli's operation). Incision through the anterior uterine wall from the external os to the fundus.

Six operations with 6 successes (Gayet, Oui, Peterson, Spinelli, Taylor, Thorn).

The vaginal methods collectively show 26 cases with only 3 failures and no deaths, or 88 per cent. successful.

From the standpoint of statistics there can be no doubt of the superiority of the vaginal over the abdominal route. Where the former technique was employed, reposition was successful in 88 per cent. of the cases; this as compared with 53 per cent. of successes by the abdominal route and even this is reduced to 33 per cent., if from the total number of repositions be deducted those cases where the inversion ring had to be incised from within, a part of the technique which could be performed with greater ease and safety from the vaginal side, since the inverted organ is low down in the vagina and easily accessible.

At the first glance, it would look as if the inversion ring could be dilated easily through the abdominal incision, especially when it is brought into view and nearer the operator by the Trendelenburg position. But a study of the 15 reported cases shows this not to be the case. Not only is it difficult to dilate the ring from above, either with steel or other instruments, but the danger of bruising or tearing the soft parts either composing or passing into the funnel is considerable. Another difficulty is met with in the tendency of the ring to contract again after it is once dilated, before the fundus can be reinverted through the ring from below. In certain cases, like the one reported by Dr. E. W. Cushing, the method will succeed because the fundal walls are rather lax and easily indented. But such is not usually the condition met with in cases of chronic inversion. On the contrary, microscopic examination of the removed or amputated uteri has shown that the walls of the fun-

dus contain an excess of connective tissue rendering them unduly hard and unyielding so far as indentation is concerned. I know that this was true in my own case, for it was only after I had carried the anterior uterine incision upwards nearly to the fundus that I was able to reinvert the latter's sclerotic walls. In their attempts at indentation of the fundus, both Malins and Mundé illustrate the unyielding nature of the inverted fundus. They passed a suture through the fundus by way of the ring and from within outwards. On the mucosa side was fastened in one case a rubber drainage tube and in the other a button. Traction was made upward with the idea that the fundus would be drawn upward through the ring and reposition be accomplished. But the fundus did not yield as was expected, for, instead of becoming indented, the drainage tube and button were pulled through the fundus and appeared at the entrance of the funnel.

Another great objection to the abdominal route in the treatment of chronic uterine inversion lies in the fact that in the majority of instances one has to deal with patients weakened by prolonged and excessive hemorrhages. No matter how expert may be the operator by the abdominal route, the shock will be greater than where the work is performed from below. The danger of sepsis is also greater in patients whose blood is so vitiated, and this danger is enhanced by opening the abdomen.

Cushing's contention that by the abdominal route adhesions in or about the inversion ring can be separated with more care loses its force, since adhesions in the condition under consideration, as pointed out by Küstner, are exceedingly rare. Even if present, they can be equally well handled from below after splitting the uterine wall and opening up the inversion ring.

Just as in my own case, a study of the cases of inversion treated by colpohysterotomy will show that after the uterine incision is made there is no further loss of blood. One does not have to open the abdomen to control such hemorrhage, when the ovarian and uterine arteries are within easy reach from below.

Neither do we need the abdominal incision for the performance of a suspension operation as the final step of the technique. Such suspension can easily be accomplished at the expense of only a few moments' time by the vaginal fixation of the round ligaments.

It would seem as if the methods of treatment of chronic inversion by the vaginal route had been needlessly confused. Too much time and space have been given over to questions of priority. Because an operator prefers to incise the anterior instead of the posterior uterine wall

does not stamp him as a man of great originality. I have endeavored to trace the development of each change in the technique of the various operations for the purpose of showing that they differ, not so much in kind, as in degree.

As stated at the outset, the main object of any operation for chronic uterine inversion must be the dilatation of the inversion ring to such an extent as to allow of reposition through it of the larger fundus. As a study of the literature will show, this can be accomplished by various methods according to the nature of the case being treated. With the uterine walls in a certain state of contraction, simple incisions of the cervix, only partly severing the constricting cervical fibres will prove sufficient to allow of reposition. In this way can reposition be explained in cases like Barnes, Duncan and Hirst. The latter expresses his surprise that no one has thought before of the simple procedure of splitting the posterior lip of the cervix. As I have endeavored to demonstrate, such a procedure had been considered long ago and had been found efficacious in certain cases. But where certain conditions of the uterine walls exist as a result of the inversion, mere incisions, such as were employed by Hirst and others, have proved entirely inadequate.

The same may be said of partial posterior colpohysterotomy (Küstner's operation). This incision, stopping short of the fundus and the external os will be found totally inadequate in the large majority of cases for the same reason given above, the unyielding fundal walls can not be made to reinvert through such an incision. For this reason the operation has been found efficacious in only a limited number of cases. Küstner himself in one case was obliged to enlarge the incision and completely divide the cervix. Such has been the experience with most of the operators under group 2, complete posterior colpohysterotomy. They started out by making the smaller incision, found it inadequate and ended by completely dividing the cervix. It is the same with anterior colpohysterotomy. The small incision (Kehrer's operation) will be found to serve only in a small number of cases. Complete colpohysterotomy with an incision from the external os to the fundus will be found necessary in the large majority of cases. In my own case, without knowing it, for I had not at that time looked up the literature, I really first made use of Kehrer's incision. If I had persisted in my attempt at reposition through the incision ending at the centre of the uterine body, I should have torn the uterus. Rather than run this risk, I extended my incision to the fundus.

Spinelli claims that in chronic inversion, the anterior wall atrophies, while the reverse is the case with the posterior wall. For this reason he

contends that the incision should be made through the anterior wall. I have been unable to find any evidence in support of Spinelli's contention. In my case, there was no atrophy; on the contrary, a marked hypertrophy existed. Wallgren gives the same testimony as regards one of his cases.

Spinelli's second argument in favor of the anterior incision is worthy of more consideration. His claim is that in case the posterior wall be incised, after reposition, adhesions will form along the line of suture and hold the uterus in a state of retroversion or retrocession. It is reasonable to expect that after reposition the ligaments and other supports of the uterus will be greatly relaxed. For this reason the uterus, for a time at least, will fall backwards and ample opportunity will be afforded for the formation of adhesions which will serve to hold the uterus in a backward position. If for no other reason than that the uterus can be held forward by operations performed through the anterior cul-de-sac, I would advocate the anterior operation.

Posterior colpotomy has been almost entirely displaced by anterior colpotomy since it was found that by the anterior incision the appendages could be manipulated more advantageously. I think the same will hold true in the case under consideration, and that the anterior will eventually be given preference over the posterior incision in the treatment of chronic inversion.

I would strongly urge the advantages of Taylor's suggestion that in case there arises any difficulty in approximating the thickened and beveled edges of the incised uterine wall, a wedge-shaped piece be removed from either wall. If this be properly done, not only the muscular, but also the peritoneal layers can be brought accurately in apposition.

The question of suturing the incised uterine wall brings up two questions. First, was the transient high temperature present in my case due to imperfect coaptation of the uterine walls or was it due to absorption of toxins from the replaced uterine mucosa? Second, in case of subsequent pregnancy, would there be any danger of rupture of the uterus? The microscopic examination of a portion of the excised wall, including mucosa in my case, showed the latter to be covered with fibrin, cell debris and leucocytes. I believe the sudden rise in temperature to have been due to absorption of this product. The temperature subsided almost as suddenly as it appeared and there were no further signs of sepsis.

Undoubtedly any excised uterus is in more danger of rupture in a subsequent pregnancy than one not weakened by the presence of scar

tissue. I do not, however, believe the danger to be great, certainly not of enough moment to militate against the operation. Rupture from scar tissue in the uterine wall occurs usually in labors subsequent to Cesarean section, and is due to the weakened uterus endeavoring to overcome some obstacle to labor, such as a contracted pelvis, a condition not presumably present in a patient with inversion of the uterus.

In conclusion, may I ask why in the light of our present knowledge of the treatment of chronic inversion of the uterus, we should not in any given case disregard the old methods of reposition and at once employ the more modern, the safer and surer surgical methods? The elastic pressure method is uncertain and dangerous, since it is apt to increase the hemorrhage in a patient who, in the majority of cases, is in a sad state of depletion from loss of blood. The same is true in regard to taxis, only in a greater degree. Even when taxis succeeds, it is usually only at the expense of the integrity of the tissue in or about the inversion ring. It is no more logical to employ an uncertain method such as this than it would be to forcibly replace an adherent retroverted uterus without opening the cul-de-sac or abdomen. What gynecologist thinks of doing this to-day? I am fully aware that many inverted uteri have been replaced by taxis. I am also aware of the reports of cases where spontaneous reposition has taken place. But this does not militate against the argument that one should employ at once in the treatment of chronic inversion the surest and safest method, and this will be found to be, in my opinion, some form of the incision operation by the vaginal route. The size of the incision, whether in the anterior or posterior uterine wall, will depend upon the condition of the walls and rigidity of the inversion ring. Those cases which would have yielded to prolonged and violent taxis, will be relieved possibly by a rather small incision through the cervix after the transverse incision in the anterior or posterior cul-de-sac. Those cases that would have yielded to no amount of taxis or pressure, will require a more extensive incision, probably even to the fundus.

At least, this was the conclusion arrived at in my own case prior to the operation. I refrained intentionally from attempting replacement by taxis in a patient weakened by the loss of blood, where the inverted organ oozed blood at the slightest touch. The results in my second case were so superior and so much more satisfactory than were the futile attempts in my first case that it made me an advocate of the more rational surgical treatment instituted at the outset.

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THE PRESENT POSITION OF HYSTERECTOMY FOR FIBROIDS.

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What a change has come over the operation of hysterectomy for fibroids in the last fifteen years! At that date the mortality of the published cases was one in every three; what it may have been in the unpublished cases we have no means of knowing, but a fair estimate would probably fix the death rate at two instead of one in every three cases operated upon. Doubtless operations are now performed which many would think unjustifiable, and there does seem to be a certain amount of want of consideration for what is to be gained by patients of about fifty years of age, as compared with the risk, even though this be placed very low. I have as yet met with only one patient who had been told that there was no risk at all!

It is difficult to say what is the amount of danger incurred by a patient who consents to the operation of hysterectomy at the present time. The estimate must be made for each patient. In a fairly healthy woman with a tumor which presents no special difficulty in removal, the risk may be placed at 2 or 3 per cent, certainly not more. When serious complications are expected it ought to be put somewhat higher. In naturally feeble women, where the pulse is small and compressible, where the vitality is low and the recuperative powers are not good, more especially in those cases where the tumor is large and either adherent or has opened up the broad ligaments, the danger to life may be very great indeed. Still, though such a combination is rare, a case of this kind has much to gain, and it may be well worth the patient's while to take the extra risk, that is, when the question is one of operation or no operation, and when Apostoli's treatment, which to my mind is specially suited to such cases is ignored. The reason why I would specially advise electricity in such cases is that there need be no risk, and the probability of cure is far greater than the probability of recovery after such an operation. It is utterly different when the risk is only one in forty or fifty. An ordinarily healthy woman even though her strength has been deteriorated by years of suffering and hemorrhage, due to the presence of a badly adherent fibroid tumor, has a better chance of her life than one who is naturally feeble. What has a woman to gain by hysterectomy? In some cases, nothing at all; in very many, very little indeed;

in some, a life of comfort and happiness as against a life of misery ; in a few, life itself. It is easy to understand how it is that, as a rule, the older men in the profession, as compared with the younger, are averse to hysterectomy. They have seen for themselves fibroids grow and eventually lessen in size or disappear after the menopause, this decrease in size sometimes commencing before menstruation had entirely ceased. On the other hand, the younger men have not had time to see this, nor perhaps have they given the tumors, or the patients the chance of waiting until the change of life. They may perhaps have been taught that the menopause occurs naturally about 45 or 46 years of age, and when they find that the fibroid tumor is growing, and that the periods are going on at 50 or 52, they may naturally say, "the older men were wrong, this tumor must come out because the menopause shows no signs of arriving." It must be fully recognized that the menopause does not come so early, and that the average time, especially in the bleeding cases, is from 52 to 54 years of age. When this is understood, an operation may be considered necessary at 46, which would not be advisable at 52, as in the first case the average gain of good health would be from 6 to 8 years, while in the second the average would be less than two years. We require a little moderation when discussing the history and treatment of these tumors, and it must also be recognized that a certain number of women suffer so much that life is a misery to them. Lately, one of the best known of the hospital obstetrical physicians of London gave an interesting address, which seemed to be intended to show, that, as fibroid tumors are very rarely the cause of death if left alone, hysterectomy is seldom justifiable ; at least if the general mortality is as great as 17 per cent, which figure he gave as the average result of five London hospitals, he apparently did not take sufficiently into account the women who suffer much but who are not in danger of their lives, or at least this part of his address was overshadowed by the previous portion. A quotation may here be given from the writings of the late Dr. Thomas Keith who was never much in favor of hysterectomy. "But in a certain proportion—not necessarily in cases of large tumors, and if I were to make a guess I would put the number of such at about five per cent—life is a long weary burden ; a little respite is got only during the short interval between the periods, and often there is not even that. These unfortunates live on somehow, a burden to themselves and to their friends, but they rarely die from their tumor. In an advanced case of ovarian disease, be the local difficulties what they may, one can honestly encourage a woman to run any amount of risk. She has not much to lose—a few months only, it may be, of ever-increasing suffering—

and she may gain much by an operation, having much to gain. It is quite different in the case of nineteen-twentieths of those who have a simple uterine fibrous tumor. They may have years of fair health before them; and even in the worst of them, the chances are, that they will live on—not in comfort, certainly, some perhaps in misery—but still they will live and not die. These have not much to gain by chancing a dangerous operation.” This was written at the time when the known mortality was over 30 per cent, truly a “dangerous operation.” It might be rightly repeated if the figures collected by Dr. Champneys from some of the London hospitals represented the actual mortality of today. It is impossible to find out how many women die after hysterectomy, as the records do not go so much into detail, and it may possibly be that the general mortality is as high as that of the hospitals quoted above. The operations really necessary to save life being extremely few and those to save suffering and give back health and strength in comparison many, the mortality must be reduced very materially, for we cannot give back life. I believe it has been reduced in the last few years, although in part this reduction has been gained by a large number of unnecessary operations. This, to my mind, is beyond a doubt as I have seen quite a number of patients where I could see no reason why they had been advised to risk the minor troubles of an operation, far less their lives; in some the symptoms were so slight that I could not even advise that they should go to the expense of Apostoli’s treatment by electricity, as they were not suffering and were nearing or over 50 years of age. It is in this point above all that the difficulty lies, for who is to decide that the operation is or is not justifiable? Certainly not the patient as a rule, for she cannot understand the possible risks as a surgeon can. Besides the circumstances of a poor woman may render an operation imperative, whereas a rich one may suffer very little because she can take care of herself and does not have to do any work.

The lists of operations are very unsatisfactory because there is no standard to go by and descriptions are often so recklessly incorrect and careless; for example, we may find a tumor described as “large” or “the largest I have ever seen” and we may perhaps discover that the “large” one extended up to the umbilicus!

The real reduction in the death rate which has, I believe, taken place, has been obtained by the systematic discarding of the clamp and serrenoeud, the extraperitoneal operation, and the adoption of the intraperitoneal treatment of the neck of the uterus or complete hysterectomy, barbarously called in this country pan-hysterectomy, a name which apparently means removal of the whole of the uterus!

The reason why we were so long coming to this method lay in the consideration of the treatment of the pedicle in ovariectomy and the want of a correct principle to work on. Also, in the early days, as in the early days of ovariectomy, one great want was the surgically clean ligature, which we owe to Pasteur and to Lister. The absence of a correct principle is shown in the work of Nathan Smith. He evidently had the idea, an idea which has continued almost to the present day, that an animal substance was likely to do less harm than a manufactured one, when introduced into the body of an animal. To a certain extent he was right but not in the way he thought, for a properly cured strip of animal tissue was likely to be surgically clean, and he was thus led away by what he considered a principle, which has turned out to be no principle at all. Next came the clamp of Spencer Wells, which was intended to allow the end of the pedicle to slough outside rather than inside, as it was supposed to do. In the early days it often did slough, but that was due not to the constriction of the ligature as we know now. The clamp was at the time a useful instrument and saved many lives. After the clamp, the cautery of Baker Brown and the intraperitoneal method ought to have reduced the mortality, but Brown was not popular and so his method was not generally used. With the advent of Lister and the recognition that it was not the material of which the ligature was made which was of importance, but the state of the thread, whether clean or not clean, the intraperitoneal method was universally adopted.

It was natural that those who had worked through these stages should, when they began to perform the operation of hysterectomy, aim at the intraperitoneal method, but there were difficulties in the way. The ovarian pedicle was transfixed and ligatured *en masse*, but this was seldom possible in hysterectomy. There were two objections, first the uterine cavity, and second the nature of the fibroid tissue. It was too elastic, and at the same time was easily cut through by a ligature. In the early days of hysterectomy also, the tumors were large, averaging probably at least 12 pounds, and when the growth was cut off after a wire or clamp had been put around the neck, the gush of blood from the tumor was often so great as to be alarming. Orfe, therefore, did not feel happy in cutting through a mass of firm tissue, perhaps four or five inches in diameter, unless one felt confident that there was something firm and strong below. On temporarily loosening the clamp for one reason or another, blood would be seen to flow apparently from everywhere; also on examining the section of such a tumor, I have counted as many as twenty arteries each as large as an ordinary radial.

Looking back, it does seem strange that no one recognized how easily the circulation could be controlled by tying the uterine arteries—there never was any trouble with the ovarians. Applied anatomy was wanting. Probably the large size of many of the tumors created part of the difficulty, for, after separating the broad ligaments from a twenty or thirty pound tumor one was glad to get on a clamp which would certainly prevent any bleeding, and which had also the advantage of being able to be quickly adjusted. The operations were too formidable to encourage one to take any unnecessary risks and to try many experiments.

Doubtless all of us who were working at abdominal surgery in those days were trying how the stump could be safely left inside the abdominal cavity. I know that my father and I were, but we were on the wrong track. By cutting out part of the cervical canal one difficulty was easily eliminated, but our efforts were directed to securing in some way the whole of the stump, instead of securing the vessels, and either stitching the raw surface together or removing the neck completely. We tried the cautery, we tried ligatures, we had a very powerful instrument made to try and compress the tissue of the stump before ligaturing, but it sometimes cut through the tissues; and all the time the solution of the difficulty lay in any and every book on anatomy. Occasionally a case was treated intraperitoneally, but this was always due more or less to the accident of there being enucleation in the pelvis combined with a thin cervix. The extraperitoneal treatment has died hard as it did in the ovariectomy days, and though now it is probably quite dead the battle still rages between complete removal, and removal of the tumor and uterus leaving part of the cervix. Fortunately, so far as one can tell at present, it is not of very great importance which method is preferred. As probably no two fibroids are exactly alike, many modifications of the operations have been adopted, one can hardly say invented; but in the main the operation is performed either by separating the broad ligaments from above, or from below according to Dr. Doyen's plan. As this method was fully described in the *Lancet* not long ago, the description need not be repeated. When the ligaments are tied from above, the steps of the operation are as follows:—

Extraction of the tumor with the corkscrew, and it is at this stage that there are signs of shock; ligature of the upper part of the broad ligament including the ovarian artery, and usually separate tying off of the round ligament, first on one side and then on the other, and before cutting through the ligaments, controlling bleeding from the tumor with forceps; dissection down of the broad ligaments till the uterine

arteries can be either felt or seen, bleeding from the tumor being prevented as before with forceps; temporary clamping, division, and ligaturing of uterine artery on one side and then on the other, the bladder having been previously separated off the tumor if necessary; removal of the tumor with a bistoury; seizing of the stump with forceps, and excision of what can be seen of the uterine canal. Then with fine silk in a curved needle, the edges of the stump are brought together, the peritoneal edge and a small portion of the firmer tissue being taken up by the needle. It is not necessary to do more than bring the peritoneal edges exactly together, no special method of stitching being required; nor is it necessary to make flaps either of the stump or of the peritoneal covering. When the cervix is to be removed, it is not cut off after the uterine arteries have been secured, but the vagina is to be opened, usually behind, and with scissors its circumference can be rapidly cut round. The peritoneal opening is then stitched up.

When one broad ligament is specially short, it may be more convenient to combine the methods and divide one ligament from above and the second from below.

My practice is at present rather in favor of leaving the cervix, perhaps because I have done it more frequently, and also because it seems to me to be rather quicker and easier. It will not surprise me, however, if the operation of election eventually comes to be the complete removal, the so-called pan-hysterectomy.

It is difficult, nay impossible, to lay down any positive rule for the performance of hysterectomy, for it is very seldom that it is absolutely *necessary* to resort to this operation to save life; whereas, one must practically always advise the removal of an ovarian tumor. One has to consider the age of the patient, her surroundings, and how much she suffers or is likely to before Nature can step in to effect a cure. At fifty years of age, the symptoms must be very severe to justify me in advising hysterectomy. Others certainly hold a different opinion and appear to ignore the question of age altogether. This is wrong for it is not fair to the patient to withhold the fact that age *does* play an important part in the prognosis.

In the following cases, however, one may safely say that hysterectomy ought to be the rule: in all fibro-cysts, in all edematous tumors when accompanied by profuse watery discharge, in all large tumors causing symptoms, and when patient is under 50 years of age. By large tumors, I mean those which reach up to the ribs. Even when a patient is over 50 it may be worth her while to have a tumor of 30 or 40 lbs. removed.

In small tumors extending as high as the umbilicus or so, fibrocysts and edematous tumors excepted, I as a general rule advise Apostoli's treatment. This form of treatment does not seem to have been very successful with some. Nor is this to be wondered at, if the accounts received from patients treated by others have been anything like correct, for it has seemed to resemble Dr. Apostoli's method simply in that a battery was used.

Fifteen years' experience has taught me that electricity properly applied will stop all symptoms, reduce permanently the growth and cause the menopause to come early in the great majority of fibroid tumors, where the growth is not submucous, without danger to the patient. At the same time I do not hold that electricity even in small tumors is, of necessity, always the best treatment, because the risk of hysterectomy is now comparatively little, and the patient is confined to bed for only two weeks, instead of the four or six, which were necessary when the clamp or serrenoeud, the routine practice of ten or fifteen years ago, was used. This may seem to point to the lessening of my belief in the benefit to be derived from Apostoli's treatment. It is not so, but it is one thing to recommend operation when the mortality is 1 in 3 as it was when I began using Apostoli's treatment, and another when it ought not to be more than 1 in 40 or 50. So far, I have been so fortunate as to have had only one death after the intraperitoneal operation, but had the patients I have cured with electricity been operated on, it is probable that the results would not have been so satisfactory.

THE TREATMENT OF FIBROID TUMORS OF THE UTERUS.

BY ARCHIBALD McLAREN, M.D.,

St. Paul, Minn.

Fibroid tumors, or more properly fibromyomata of the uterus, are very common in women in middle life. The small ones produce, as a rule, no symptoms and need only to be kept under observation. I have a few patients with such tumors who come to see me for an examination once in six months. And one whom I particularly recall, whom I have seen at irregular intervals for the past ten years. There has been no change that I can appreciate, and as they suffer no distress, I have not suggested any interference. On the other hand, I have never seen a fibroid tumor disappear or lessen in size either before or after the meno-

pause, and I have seen many women in whom the menopause had been greatly prolonged and the change of life delayed for several years.

I have also seen more than once a fibroid uterus steadily increase in size in spite of the stopping of the menstrual flow. And several such cases have eventually had to be operated upon on account of the pressure symptoms as well as the danger of a complicating malignant change.

One of these elderly patients was operated upon four years ago, in her sixty-seventh year. She recovered and is perfectly well to-day.

A second patient of about this same age upon whom I removed what was apparently a fibroid uterus, had a recurrence in the pelvis and died of carcinoma inside of nine months.

Fibroids, as a rule, occur in women during the child-bearing period, and usually in women who do not or cannot bear children. Women who are unmarried or married late in life, perhaps after a small fibroid has commenced to grow and has developed a secondary chronic endometritis, or women who have disease of the appendages and have been sterile several years, these are apparently the ones who are most likely to develop fibroid tumors. It has seemed almost as though nature rebelled at not being allowed to do her proper work and insisted upon growing something.

The fibroid tumor always commences to grow in the wall of the uterus and is later pushed out by its growth and by contraction of the muscular fibres in the direction of the least resistance; this is usually under the peritoneum and occasionally under the mucous membrane of the canal.

Since June of 1895, I have operated upon eighty-eight fibroid tumors of the uterus, with four deaths, or a mortality of less than 5 per cent. Only seven of this number have been sub-mucous fibroids, or 8 per cent. of the total number. There were two other intra-uterine or sub-mucous tumors which were complicated with other fibroid masses necessitating a removal of the entire uterus. The seven spoken of above were uncomplicated and were removed from the uterine cavity or from the vagina; one, about the size of a small hen's egg, was loosened by curettage and was forced through a lacerated cervix which I had repaired, tearing out the stitches and was removed ten days after the original operation. Five of these were large masses completely filling the vagina and three were gangrenous below the constricting cervix, which had shut off the blood supply to the lower part of the tumor. All of these intra-uterine cases recovered with one exception.

This case, Mrs. T., was first seen by Dr. McDowell of Staples, Minn., on March 19, 1896, and he immediately sent her to St. Luke's Hospital

in St. Paul, where I operated upon her the next day. She was 44 years of age, the mother of two children, the youngest 15 years of age. She had been aware of the presence of the tumor for several years and had suffered from severe hemorrhages. Her urine was turbid, containing pus and considerable albumin. The tumor extended above the umbilicus and presented at the vulva as a foul, black gangrenous mass, completely filling the vagina.

This woman was profoundly septic with a high temperature and a very bad pulse. The tumor was partly removed by morcellation with the scissors and the fingers, without much hemorrhage. On account of the soft, necrotic condition of the tumor, it could not be drawn down with the Volsella forceps. After removing more than two-thirds of the growth, the woman's condition became so bad that the cavity of the uterus was packed firmly with gauze and she was sent to the ward. She died from exhaustion and sepsis twenty-four hours later. A partial autopsy showed no peritonitis or perforation of the uterus. This woman did not die as a result of the operation, but because an operation was too long delayed.

These submucous fibroids are usually easily removed with a stout snare or with scissors. During their removal the hemorrhage can be considerably controlled by drawing the uterus firmly down with Volsella forceps. If, as sometimes happens, the hemorrhage is very profuse the cavity may be irrigated with hot water and then packed with gauze, and the operation completed the next or the second day, if there is no rise in temperature.

The use of the spoon-saw, in these cases, is very dangerous; we do not hear very much of this instrument during the past few years, but fifteen years ago it was very popular. In my interne days I saw it used in New York a few times by the most expert of the abdominal surgeons of that day, with two fatal perforations and one fatal pyemia, due to septic thrombosis of the uterine vein, following its use.

When we come to consider the two other varieties of uterine tumors, sub-peritoneal and interstitial, we must treat them in the same manner irrespective of their location. When any tumor becomes large enough to fill or choke the pelvis, it should be removed. Any tumor which gives much pain or hemorrhage should be removed. Large tumors reaching into the lower abdomen to the umbilicus or above should be removed, on account of danger of pressure on important parts, and necrosis of an anemic variety. And small tumors in young women who are sterile and wish to conceive, should also be removed, if the patient understands and is willing to run a risk which in my experience is less than 2 per cent.

As you will notice, I put no faith in either ergot or electricity. I have given ergot faithfully for years. I have never seen it accomplish anything. Several years ago I provided myself with a 125-cell battery, a modern rheostat, clay and platinum electrodes, and followed faithfully Apostolli and Massey, but accomplished nothing of any importance. One of Apostolli's cured cases was a patient of mine; she had a fibroid about the size of a mandarin orange; it had never given her any but mental distress. She was treated in Paris for six months and discharged as cured. I examined her when she returned and the tumor was of exactly the same size; a rest cure with massage and general electricity would have accomplished the same result.

How, then, shall we remove these tumors? If they are interstitial tumors of the cervix, they may be enucleated through the vagina. If they are sub-peritoneal and attached low down in the uterus, they may be removed by either anterior or posterior colpotomy. But usually a laparotomy will be necessary. In young women, the tumor or tumors, if there are not too many of them, should be removed and the uterus left, provided the appendages are not diseased. In women approaching the climacteric the uterus should be removed, but the ovaries should not be disturbed, because the secretion of the ovaries, like the parotid and other ductless glands, is valuable to a woman in a nervous way, even after the menopause.

Out of this list of eighty-eight cases which I report twenty-two have been myomectomies, without a death. I have removed as many as six interstitial tumors from one uterus. There is usually but little bleeding and the cavity is closed with a continuous catgut suture, which picks up the tissues at the bottom of the bed from which the tumor has been taken, and controls the bleeding by successive layers of over and over suturing until the last layer turns in the peritoneal edges of the cut.

I have opened the uterine canal in a few of these cases and drained the uterine cavity by a small rubber tube, passed into the vagina through the cervix, and then closed the uterine wound in the same manner as in the other cases. The enucleation of these tumors is very like the removal of fibro-adenomas of the prostate after entering the capsule. The consistency of the two is identical and the line of cleavage feels the same. Roswell Park compares the pelvic fascia and the enclosed prostate, in the man, with the broad ligaments and the uterus in the woman, and speaks of the prostate as the man's uterus. The resemblance has often been very marked to me when doing a prostatectomy. The history of a few of these myomectomy cases may be of interest.

Case 1.—Miss K., a patient of Dr. Geo. Wood of St. Paul, aged 27;

operated upon June 28, 1897. A sub-peritoneal multinodular fibroid mass about the size of a man's fist, was found attached by a broad pedicle to the fundus of the uterus.

The pedicle was divided, the vessels being separately picked up and tied, and the uterine wound sutured with catgut. She recovered. I examined her one year later and found a perfectly normal pelvis. I have not examined her lately, but I have seen her on the street and I do not think she has had any return.

Case 2.—Mrs. D., of St. Paul, aged 36; married nearly ten years. She had one miscarriage soon after marriage and never had conceived since that time. She had some pelvic distress, "a congested feeling" as she expressed it, but her principal object was to help her to conceive.

I operated upon her at St. Luke's Hospital, June 29, 1897. First curetted, then opened the abdomen and removed three fibroid tumors; one as large as an apple, the smallest the size of a California plum. She has been curetted twice since, once by myself and once by Dr. Hunter Robb of Cleveland, but to her great regret she has never conceived. I examined her a few days since, five and one-half years after the original operation, and find that her uterus is increased in size about one-half—evidently from the growth of another fibroid. She would willingly go through with it all again, if I could offer any hope of pregnancy.

Case 3.—Mrs. H., case of Dr. Guthrie of Luverne; 33 years of age; married seven years, had one child six years before; operation at St. Luke's Hospital, October 14, 1899. Two interstitial fibroids, the largest was the size of a Florida orange and covered with a thick calcareous shell and was brownish in color, on section. She recovered and reported two years later that she had not felt so well for years. Last January she returned, complaining of so much pelvic pain that I removed her uterus, right appendage and appendix. Her uterus showed several small fibroid masses growing in its wall.

I can recall two other cases in which the growths returned. In some the uterus has become adherent and the woman is not relieved. Several of these cases have made beautiful symptomatic recoveries, but as yet none of them have conceived.

There is one other class of cases in which a myomectomy is sometimes necessary, *i. e.*, in pregnant women where the tumor threatens to produce either peritonitis, miscarriage or obstruction to labor. I met one such case, in January of this year, and operated upon her at Eau Claire, Wis. She was under the care of Dr. Noble of that place. She was 30 years of age; five years married; pregnant, four months in her first pregnancy. She did not know that she had a tumor, never having

given any pelvic symptoms until five days before I first saw her, when she had sharp excruciating pains low down in her right side. I found a subperitoneal fibroid tumor the size of a mandarin orange, and easily removed it. The intra-uterine pressure made the suture of the uterine wound more difficult than usual, and the stitches showed a tendency to tear out. This woman recovered and has not miscarried at the end of two months since the operation.

In cases which are not suitable for myomectomy, the operation of supravaginal amputations, in the manner first described by Baer and Eastman and later amplified by Kelly, is the operation of choice. Complete removal of the uterus in fibroid cases is rarely necessary. Amputation is easier, is less of an operation and does not open the vagina, and so slightly lessens the risk. After removing the uterus from left to right, or right to left, as Kelly describes, I ligate the two ovarian and the two uterine arteries with large strong catgut, but I do not cauterize or stitch over the cervical stump; there is no necessity for that, and unnecessary work is always bad surgery; but I always suture carefully the anterior layer of the divided broad ligaments to the posterior. In the only case where I did not do this in the past, I later had intestinal adhesions and obstruction, which nearly cost the woman's life, although she eventually recovered after three desperate intestinal operations.

In this list of eighty-eight cases, there are fifty-eight abdominal hysterectomies with three deaths, or 5 per cent. of mortality.

Case 19.—Was operated upon at St. Joseph's Hospital, March 26, 1897. She was an old woman 70 years of age, in a very bad physical condition, due to the excessive hemorrhages from a tumor which extended above the umbilicus, and which later showed fibroid masses and malignant changes. She died on the third day from exhaustion; no peritonitis.

Case 24.—Miss A., virgin, aged 45; was operated upon at the City and County Hospital, January 19, 1898. Had been flowing excessively for several months; was supposed to have carcinoma uteri. She had one small sub-peritoneal fibroid in the posterior uterine wall. This woman died sixteen days after the operation, with symptoms of meningitis. Post-mortem partial; showed no peritonitis or adhesions, but a small abscess over the fascia of the external oblique in the edges of the wound containing about a dram of pus, which I believe was due to imperfectly sterilized catgut.

Case 31.—Mrs. M., a case of Dr. Keam's of St. Paul; aged 40; no children. Knew that she had a tumor for several years. She developed a pelvic abscess which was opened and drained through the vagina on

July 28, 1899. Ten days later, I allowed myself to be over-persuaded, and because her temperature and pulse had been normal ever since the first operation, and there was almost no discharge, and she was anxious to join her husband, in the West, I made an abdominal hysterectomy.

It was a desperate operation with double, chronic salpingo-ovaritis and extensive intestinal adhesions; the intestines were torn in two places and sutured with catgut.

This woman died on the fourth day from septic peritonitis. If she had been made to wait two or three weeks longer, she would have stood a much better chance. But she did not die as a result of her fibroids.

350 St. Peter St.

A PLEA FOR THE REMOVAL OF A MINIMUM AMOUNT OF THE BROAD LIGAMENT IN SALPINGO- OOPHORECTOMY.

BY J. WESLEY BOVÉE, M.D.,

Washington, D. C.

In the earlier history of gynecic surgery but very little attention was given to the advisability of saving the procreative organs of women whenever abdominal operations were done. Worse than that was the practice of removing healthy ovaries for symptomatic indications alone. A number of abdominal surgeons seemed to be proud of the large number of cases of ablated ovaries they could report. Many of them were of patients hysterical or neurasthenic and others the possessors of cystic ovaries—a condition now recognized as being present in some degree in nearly all ovaries *in situ*. As a result these poor women became worse and the long harrowing menopause crowded many of these unfortunate beings into invalidism, drug habit and suicide. I frequently see some of Battey's oöphorectomy cases that have suffered the many years that have elapsed since they were subjected to the operation. They deeply lament having been persuaded to have it performed. There followed this extreme practice such an awakening that the spirit of conservatism has led to egregious errors in the opposite direction. Now is being practiced such surgery as pyosalpinx and ovarian abscess resections, attempts at resurrection of chronically embedded appendages by digging them out of dense adhesions in mere shreds or ribbons, saving tubes when oöphorectomy is done, basting together such ovaries, much as does a seamstress garments being constructed, and many other foolish

things of this sort. I once saw a surgeon do a curettage and trachelorrhaphy and then, opening the abdomen, resect tubes and ovaries, markedly adherent, and do multiple myomectomy for small uterine fibroids. I understood the patient had demanded nothing should be left that would endanger a second operation.

Surely such work is not conservatism. My understanding of that word, as applied to surgery, pertains first to the patient's life, next to her health, next to her mental comfort and last to sentiment. In all the work in pelvic surgery no systematic attempt has been made to create a custom of saving the most possible of those great supports of the uterus, the broad ligaments, whenever the appendages were removed.

The plan formerly in vogue was to lift up the tube and ovary, transfix the pedicle thus formed of the broad ligament below the mass of those organs and tie about each half of it over the infundibulo-pelvic ligament on the outer side and up over the top of the ligament near its attachment to the uterus on the inner side. This latter included the ovarian ligament or portion of the ovary and the isthmus of the Fallopian tube. In fact, I have seen tube stumps an inch in length left attached to the uterus and abscesses at this site that connected with silk ligatures and only ceased to trouble after a secondary operation for their removal was performed. The Staffordshire knot of Lawson Tait that was always the *armamentarium chirurgicum* of those unfortunates who had made pilgrimages to that marvelous exponent of surgery was considered ideal. It had the advantages in the hands of experts of practically preventing secondary hemorrhage from the pedicles—a complication of the *en masse* ligature not infrequent in the past and not unheard of in recent years. The size of materials used for this purpose would appal the surgical student of to-day, and, moreover, they were nonabsorbable. With these preliminaries I will pass to the real points of this paper, which are, *first*, the unnecessary destruction and weakening of the broad ligament by the usual methods of salpingo-oöphorectomy; *second*, the complications arising from such methods; and *third*, the proper plan to obviate such destruction of the broad ligaments.

In considering the first of these propositions, we should bear in mind the relations sustained by the Fallopian tube and ovary to the broad ligament. By examining normal structures we find the Fallopian tube extending outward laterally from the cornu of the uterus and continuous in structure with that organ. For nearly the whole of its length it is covered by the peritoneal covering of the broad ligament, receiving small branches from the utero-ovarian artery, giving off corresponding veins and being lightly attached along the connective tissue

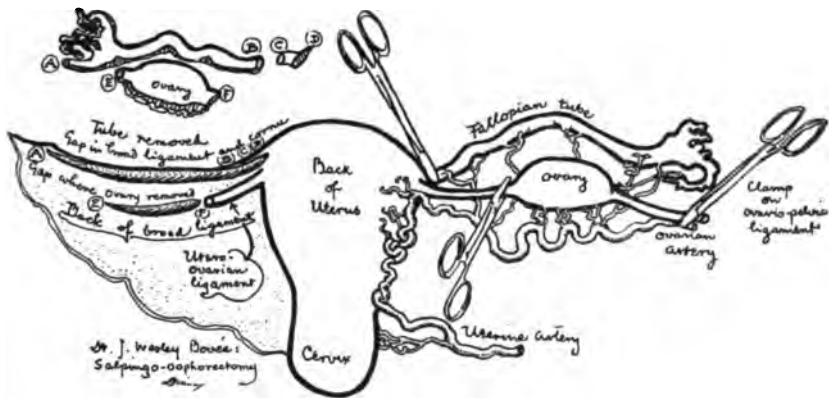
of the ligament. The ovary, attached to the uterus by the ovarian ligament, is technically located within the folds of the broad ligament, but practically is attached to the posterior surface of it, floating quite freely in the peritoneal cavity like the intestine. While anatomists contend it is covered with peritoneum they admit this layer is very thin. The removal of the tube and ovary is usually effected by removing with them an irregular V-shaped portion of the top of the broad ligament extending from near the outer end of the infundibulo-pelvic ligament to the cornu of the uterus and dipping down sufficiently to include that part attached to the ovary. As the Fallopian tube runs along the very top of the ligament and the ovary is lightly attached to the posterior surface of it the removal of this V-shaped portion of it is absolutely unnecessary in salpingo-oöphorectomy.

The complications arising from the usual method of removing the appendage are many. Allusion to secondary hemorrhage from slipping of pedicle ligatures has been made. Portions of infected tubes attached to the uterus have often been left, giving rise to very troublesome and dangerous conditions such as reaccumulation of infectious material in the tube stump with final leakage into the peritoneal cavity and its accompanying sequelæ, reinfection from the uterine cavity through stumps apparently healthy at time of operation, and abscesses at this point from such infectious material coming in contact with pedicle ligatures which give rise to much trouble including uterine hemorrhages after double ablation and the development of uterine fibroids. Another class of cases is those of pregnancy following supposed removal of both tubes and ovaries, five of which are found in medical literature. That careful ligation of the Fallopian tubes will not prevent conception has been fully demonstrated, which means the ligature either cuts through the tube, slips off or is absorbed leaving the tube lumen pervious. A very distressing accident that has resulted from placing the ligature on the infundibulo-pelvic ligament too close to the ilium and around too much of it has been the severing partly or completely of the ureter. Many of these have not been discovered until the patient has come to autopsy and a few have been discovered at the time and repaired by a very delicate operation. Probably the worst result of this evil method is the removal of a considerable portion of the supporting function of the broad ligament and the tendency to retroversion of the uterus due to shortening of this ligament which brings a greater degree of tension between the uterus and the posterior part of the outer end of the broad ligament near the junction of the iliac arteries. These results are very common. Every gynecologic surgeon has been obliged subsequently to operate

for the relief of prolapse or retroversion of the uterus from these causes.

The method I have adopted, to remove the ovary and tube with little injury to the broad ligament as well as to prevent the various complications mentioned, is as follows :

A small clamp is placed on the infundibulo-pelvic ligament close to the fimbriated end of the tube and including only the part of the ligament containing the blood vessels ; another is placed on the Fallopian tube close to the uterus, but not including the trunk of the utero-ovarian vessels ; a third is placed on the ovarian ligament. Then the tube is carefully dissected from the top of the broad ligament up to the forceps clamping it, the wound closed by a continuous over and over suture of catgut and the clamp removed. In doing this, care is needed to coaptate



properly the cut edges of the peritoneum. Then the ovary is carefully separated from the broad ligament and the ovarian ligament severed just outside the forceps. This wound is also closed by the same kind of suture and the clamp removed. We have left the short stump of the uterine end of the tube. Traction on the clamp puts the stump on the stretch and it is cut off within the uterine tissue. The wound is closed similarly to the others and the work is finished. This method does not include removal of any of the broad ligament, does not shorten it, is accompanied with a minimum amount of traumatism, insures complete ablation of the appendages and prevents connection between the uterine and peritoneal cavities. In fact, none of the enumerated sequelæ of the usual method of ablation of the appendages obtain in it.

1404 H Street.

THE VAGINAL INCISION IN SEPSIS FOLLOWING
ABORTION.*

BY HUNTER ROBB, M.D.,

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to the Lakeside Hospital, Cleveland, Ohio.

I believe that statistics justify the two following statements: (1) Of all married women who die between the ages of 20 and 40 nearly 10 per cent succumb to a puerperal infection; (2) At the present day, in private practice at least, the mortality from child-bed fever is nearly as high as it was 40 years ago. Such a confession is at once astounding and humiliating, and we must of necessity come to the conclusion that the advantages of aseptic and antiseptic procedures are either chimerical or that the belief in them is still to a large extent more theoretical than practical.

But if the mortality is still as high, what shall we say of the morbidity? No reliable statistics dealing with this subject are at hand, and how many cases of septic infection are still classed as instances of milk fever, malaria, nervous chills and the like, remains uncertain. Again it would appear that criminal abortion is very widely practiced at the present day, and certainly it is a matter of surprise that the gross ignorance and recklessness of those who carry out such unlawful procedures do not lead to consequences even more disastrous than those of which we have cognizance. Hence we may conclude that even although every reputable physician should observe the strictest asepsis and that as a consequence child-bed fever should occur only as a rare accident in his practice, there will always remain a number of cases of sepsis after abortion for which the medical profession is in no way responsible but which, nevertheless, it will certainly be called upon to treat.

But even if the unfortunate patient survives an infection following labor or an abortion, she often remains a wretched invalid, sometimes for the rest of her life, or at other times until her sufferings are removed or palliated by a mutilating operation. It can hardly be doubted that fatal or bad later results are often due to an imperfect or an improper treatment of the condition. It is now a generally accepted fact that shortly after the idea of antisepsis had been promulgated, many patients died from sublimate or carbolic-acid poisoning following intra-uterine injections of solutions of these drugs. As a result, such

*Read before the Cleveland Academy of Medicine, Apr. 17, 1903.

strenuous procedures fell out of favor, especially after experience had shown that quite a considerable proportion of puerperal, even of streptococcic, infections will recover, if the patients receive only symptomatic treatment. Nevertheless, since, as has been pointed out, such recoveries are often very incomplete, and the patient rarely regains her former health, or at least only after a major operation, it is our bounden duty always to be on the lookout for some procedure which may not only reduce the mortality, but may also render recovery, when it occurs, more perfect. It is on this subject that I wish to speak, my remarks dealing mainly with cases of abortion, although it is not impossible that they may be applicable to a large proportion of septic cases following labor at term.

So far as my own experience goes, the remote results of a septic process following labor or an abortion, implicate more particularly the Fallopian tubes and ovaries in from 40 to 60 per cent of the cases. When an infection occurs after an abortion, there is usually a chill followed by an elevation of temperature, an accelerated pulse rate, and more or less pain in the lower part of the abdomen. Together with these symptoms we often have a bloody discharge from the vagina, or one mixed with pus or mucus, which not infrequently has a very offensive odor.

As a rule the infection begins in or near the external genitals, and providing that it is of a virulent nature it implicates successively the structures of the vagina, the cervix, the uterus and the Fallopian tubes, and thus extends to the peritoneal cavity. At other times it reaches the peritoneum through the uterine walls by way of the lymphatics or blood vessels. Accompanying the inflammation there is often an exudate, which may accumulate in the peritoneal cavity or may remain sealed up in the Fallopian tubes. This exudate may be mucous, serous, purulent or bloody in character; or more often it is of a mixed form. It may contain virulent organisms, although not infrequently it is sterile. If the fluid in the cul-de-sac is purulent the Fallopian tubes and ovaries are very liable to become infected, and the ends of the former may become sealed up. If absorption of the exudate does not occur, organization takes place, with the formation of adhesions, which bind down the tubes and ovaries more or less firmly and thus interfere with their functions. In this way various symptoms are produced which cause the patient a greater or less amount of inconvenience until the adhesions are separated. Under such circumstances we have two problems to solve. (1) How can we ensure to the patient the

best chance for her life? and (2) How can we at the same time prevent the occurrence of unfortunate sequelæ?

Our present method of dealing with an infection after an abortion is as follows: The cavity of the uterus is first cleaned out in order to prevent the continued absorption of toxins from any infectious material that may be present, and thus at least limit the intensity of the process. For this we employ the finger alone, or combined with the curette. The cavity is then thoroughly washed out with a hot saline solution and two ounces of peroxide of hydrogen; it is then cleansed again with the saline solution and sponged dry. Two or three drachms of iodoform powder are carried into the uterine cavity, after which the latter is packed with strips of sterile gauze. We next make a free opening into the cul-de-sac, and after evacuating any fluid that may be present, we irrigate it freely with hot saline solution, followed by one or two ounces of hydrogen peroxide. After this the cavity is again washed with saline solution and sponged dry. Lastly two or three drachms of sterilized iodoform powder are dusted into the cul-de-sac, which is then packed tightly with strips of sterile gauze. By this procedure we believe that we obtain two distinct advantages: (1) By evacuating the fluid we prevent further absorption of toxins from the cul-de-sac. (2) We save the Fallopian tubes and ovaries by preventing adhesions which would almost inevitably form as a result of the organization of the exudate.

Pryor, of New York, who has written at some length on this subject, does not carry out the vaginal incision unless he can demonstrate the presence of organisms in the uterine cavity. Moreover, even in the latter case, he opens into the cul-de-sac, not for the purpose of drainage, but in order to fill the pelvic cavity with iodoform gauze, whereby he aims at isolating the uterus completely, and bringing all parts of the pelvis into contact with the gauze, which eliminates free iodine when it meets with a serous membrane. Our experience, however, has shown that even when no infective organisms can be demonstrated in the secretions from the uterine cavity, there are not infrequently present in the cul-de-sac purulent or muco-purulent collections containing bacteria. In some of our instances, indeed, a considerable amount of free pus, serum or blood has been found, even when a bimanual examination under full anesthesia had failed to suggest its existence.

I shall briefly present the clinical history with the bacteriologic analysis of 10 cases of sepsis following abortion treated in this way during the past year. The operations were performed by myself and

my assistants at the Lakeside Hospital, and the bacteriologic work was carried out by Dr. Charles D. Williams, my former Resident Gynecologist, in Prof. Howard's Laboratory.

In these cases the results both immediate and later, following the procedure have been so uniformly satisfactory, that we have great hopes that a more extended experience will demonstrate it to be not only a life saving method, but a reliable prophylactic measure against the subsequent loss of function of the lateral structures, and a preventive against much of the wretched health that so many of our patients date from an abortion or a labor.

Clinical and bacteriologic analysis of ten cases of septic infection following abortion, in which dilatation of the cervix and curetting of the uterine cavity was supplemented by incision into the vaginal cul-de-sac.

Age. The oldest patient was 39, the youngest 19 years of age. The average age was 26 years. Eight were married and 2 were widows.

Occupation. Housework, 7; cashier, 1; prostitute, 1.

In 4, full-term births had occurred; there had previously been 11 miscarriages among the 10 patients.

Abortion had been induced in 7 cases, a rubber catheter having been inserted into the uterine cavity.

Symptoms. The most frequent symptoms were a sharp or dull pain in the lower abdomen, chills and fever, and a bloody discharge from the vagina.

Temperature and pulse on admission to hospital.

The highest temperature was 105.7° F.; highest pulse, 160.

The lowest temperature was 100.3° F.; lowest pulse, 96.

Average maximum temperature 102.7° F.

Average maximum pulse 129.

Lowest maximum temperature 100.3° F.

Lowest maximum pulse 96.

The vaginal discharge. In 7, it was bloody in character; in 3, purulent.

Operation. In each case the uterine cavity was curetted and the pouch of Douglas was opened.

In 2 cases a slight amount, in 2 cases a large amount and in 6 cases a moderate quantity of débris, was removed from the uterine cavity.

In 3 cases the débris was foul-smelling in character. It consisted of portions of the placenta, fetal tissues and endometrium.

Material in cul-de-sac. In 2 cases there was no perceptible amount of fluid in the cul-de-sac and in these cases there was placental tissue in the uterine cavity. In the second case there were cocci on coverslip examination from the cul-de-sac.

In 8 cases in which fluid was found in the cul-de-sac the following amounts and characters were noted:

- (1) 800 cc. of sanio-purulent fluid with a fecal odor.
- (2) 125 cc. of pus.
- (3) A small amount of blood-stained fluid.
- (4) About 40 cc. of a clear fluid.
- (5) A small amount of clear fluid.
- (6) 200 cc. of a purulent fluid.
- (7) 70 cc. of pus.
- (8) 180 cc. of a sanious fluid.

Thus in 80 per cent of the cases fluid was found in the cul-de-sac varying in amount from a small collection of a clear fluid to 800 cc. of a sanio-purulent fluid. In 4 cases (40 per cent) it was purulent in character.

Leucocytosis. In 5 cases in which the blood examination was made, the following counts were recorded: 18,000, 16,000, 12,000, 22,000, 28,000. In the remaining 5 cases the patients were taken to the operating room immediately after admission to the hospital and the blood was not examined.

In 4 of the 5 cases there was a marked increase in the number of the leucocytes.

Results—9 recovered, 1 died.

Coverslip and cultural examination of contents of the uterine cavity and the cul-de-sac.

Case I. Coverslip:—Numerous cocci and bacilli from the uterine cavity and from the cul-de-sac. Cultures:—*B. coli* and streptococcus.

Case II. Coverslip:—Negative. Cultures:—Negative.

Case III. Coverslip:—Cocci and bacilli from uterine cavity and from cul-de-sac. Cultures:—*B. coli communis*.

Case IV. Coverslip from uterine cavity and cul-de-sac:—Negative. Cultures:—Negative.

Case V. Coverslip from uterine cavity and cul-de-sac:—Negative. Cultures:—Negative.

Case VI. Coverslip:—Numerous bacilli from uterine cavity and cul-de-sac. Cultures:—*B. coli communis*. At autopsy, coverslips from uterus, Fallopian tubes and peritoneal cavity showed strepto-

coccus and *B. coli communis*. Cultures made at autopsy from Fallopian tubes gave *B. coli communis* and *B. mucosus capsulatus*.

Case VII. Coverslips:—No organisms from uterine cavity. Bacilli from cul-de-sac. Cultures:—*B. coli communis*.

Case VIII. Coverslips:—Uterine cavity negative. Cul-de-sac, *Staph. pyogenes albus*. Cultures:—*Staph. pyogenes albus* from cul-de-sac.

Case IX. Coverslips:—Negative from cavity and cul-de-sac. Cultures:—Negative.

Case X. Coverslips:—Cocci from cul-de-sac. Negative from uterine cavity. Cultures:—Negative.

Thus in 5, or 50 per cent, of the cases organisms were found on coverslip and culture-tube examinations.

The following organisms were demonstrated in coverslips and cultures:

B. coli communis, 4 times.

Streptococcus, twice (together with the *B. coli*).

In one case in which the streptococcus was present it was found in the peritoneal cavity and Fallopian tubes at the autopsy. It was demonstrated only by the coverslip examination.

In 3 cases no organisms were demonstrated either in coverslips or in cultures from the uterine cavity, but in each case organisms were present in the cul-de-sac. In one, *B. coli communis* and in the other, *Staph. pyogenes albus* was found, while in the third case no growths could be obtained from the cul-de-sac, although cocci were demonstrable on coverslips.

In 4 cases no organisms could be detected on coverslip or in cultures from the uterine cavity or from the cul-de-sac. In 3 cases the results of the coverslip and culture-tube examinations were similar.

These findings are not altogether in accord with those of certain writers who state that organisms can always be detected in the uterine cavity when the peritoneum is infected. Moreover, our observations show that organisms may be present in the cul-de-sac when none can be detected in the uterine cavity.

The fact that the *B. coli communis* was the organism present in about 40 per cent. of the cases afforded a more favorable prognosis than would be justifiable in the presence of *Streptococcus* or *Staph. pyogenes aureus*. The *B. coli communis* met with fortunately was not of a high order of virulence.

It may be of interest briefly to detail the history of the fatal case.

History. L. Mc. Age 25. Admitted to the hospital, July 17, 1902. Married 3 years. Nullipara. One miscarriage at 4 months.

Occupation, housework. On admission she stated that, after missing four menstrual periods, she had had an abortion induced on July 6. Six days later she had chills and fever. The fetus was removed 8 days later by manual manipulation. The fetal sac, however, did not come away at this time. Two days later the patient had a severe chill, followed by a fever and a great deal of pain in the lower abdomen. She was in a marked septic condition; the temperature was 103° F., the pulse 150; she was slightly delirious.

On examination the uterus was found enlarged to about the size of a 5 months' pregnancy. There was a foul-smelling, purulent discharge from the vagina.

She was put under the influence of ether immediately and a large amount of necrotic, foul-smelling material was removed from the uterine cavity by means of the fingers and the curette. The cul-de-sac was incised, allowing from 150 to 180 cc. of a sanio-purulent fluid to escape. The uterine cavity and the cul-de-sac were irrigated with hot salt solution and peroxide of hydrogen, and then sponged dry, after which sterilized iodoform powder, and sterilized gauze were placed in the cul-de-sac. The operation was performed in twenty minutes. The patient soon after went into collapse and died within seven hours.

The following is an abstract of the autopsy protocol (Dr. H. T. Parker):

"General peritonitis, considerable amount of greenish yellow pus in abdominal cavity. Uterine cavity necrotic and of a blackish green color. This process extends from 1.5 to 2 mm. into the uterine wall. The necrotic surface of the uterine cavity is covered with cocci.

"Coverslips made from the Fallopian tubes, uterine and peritoneal cavities showed streptococcus pyogenes with a bacillus. Culture tubes gave *B. coli communis* and *B. mucosus capsulatus*."

In this case, then, we had, as the result of an induced abortion, a general peritonitis, produced by a mixed infection.

702 Rose Bldg.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY.

TWENTY-EIGHTH ANNUAL MEETING, MAY 12, 13 AND 14, 1903.

The President, DR. JOSEPH E. JANVRIN, in the Chair.

DR. I. S. STONE, of Washington, D. C., delivered an Address of Welcome, the President responding.

WHAT SHALL BE THE TREATMENT IN CASES OF PREGNANCY COMPLICATED BY FIBROID TUMOR?

DR. HENRY C. COE, of New York City, read a paper on this subject. He said that fibroids complicate pregnancy because they interfere with the normal development of the pregnant uterus, cause distressing symptoms, or jeopardize the life of fetus or mother. Each case must be studied separately, and the decision as to the treatment will vary with the patient, tumor, experience and bias of the surgeon. He pointed out the influence of the tumor on pregnancy, and of pregnancy on the tumor—increased growth, degenerative changes, environment, etc. In the three "semesters" of pregnancy:

1. *Up to Fourth Month.*—(a) Empty the uterus in case of large interstitial or broad-ligament tumors, or where they are situated in the lower uterine segment. Also in case of impacted intrapelvic growths. (b) Enucleate small tumors *per vaginam* if possible, though pregnancy will usually be interrupted. Remove intrauterine polypi if accessible. (c) Enucleate by abdominal route. Remove subperitoneal pedunculated growths. (d) Free impacted growths under anesthesia (when no adhesions are present) and keep them out of the pelvis, until they are kept out of the way by growing uterus. The wishes of the patient are to be followed so far as this can be done safely.

2. *Fourth to Seventh Month.*—Location of tumor important, as well as size and variety. Pain and pressure symptoms furnish indications for treatment. (a) Large interstitial growths. May empty uterus, though danger of hemorrhage is greater. (b) Enucleation by abdominal route; propriety of removing multiple small tumors which do not encroach on uterine cavity—wait till child is viable? (c) Keep patient under observation. Patient may go to full term and be delivered normally. (d) Impacted tumors, pressing on bladder, ureter, or bowel may call for radical operation. (e) Twisted pedicle, de-

generation of tumor, disease of adnexa, peritonitis, etc., may require interference without reference to pregnancy.

3. *After Sixth Month.*—Obtain viable fetus, if mother's life is not actually jeopardized. Can she probably be delivered at term? Yes.
 (a) With subperitoneal growths, if not too large and favorably situated.
 (b) With small interstitial fibroids if not in lower uterine segment.
 (c) With polypi presenting at os, which can be easily removed at any time. After eighth month practice the Porro-Cesarean operation, suprapubic amputation, or hysterectomy, preferably by election, i.e., before full term. The author pointed out the danger attending induction of labor at this time.

Conclusion.—Conservatism should be practiced here, as in other gynecologic operations, but not carried to extremes.

He discussed the question of marriage and subsequent risks of pregnancy in women with fibroids. The time for conservative surgery is often before there is a chance of conception. In general, if a fibroid tumor is to be regarded as a menace to life before pregnancy, the condition must be still more grave after conception occurs. Is it not the duty of the gynecologist to ward off this danger?

FIBROID TUMORS COMPLICATING PREGNANCY: SHALL THEIR SURGICAL TREATMENT BE BY HYSTERECTOMY OR MYOMECTOMY?

DR. JOSEPH TABER JOHNSON, of Washington, D. C., read a paper on this subject. He said that cases of pregnancy complicated by fibroid tumor were fortunately the rare exception instead of the rule. He knew of no statistics which stated with any pretense to accuracy their exact frequency, as they did in regard to puerperal eclampsia, placenta previa, or rupture of the uterus. Few men had acquired a large experience in the management of this complication, while many had in a large practice, both obstetric and gynecologic, met with only one or two cases, and some had never seen a pregnancy thus complicated. His own experience was limited to two cases, equally successful so far as the mother was concerned, in one of which he performed a supravaginal hysterectomy, the uterus containing a five months' fetus as well as a large fibroid tumor. In the other case, the operation was terminated as a myomectomy. The woman was four months pregnant; she was delivered five months later of a live child, and both mother and child did well. He was not in a position to speak with very much authority on either side of this important question, but his inclinations were

upon the side of the conservative operation, which had for its object the saving of the child.

When the tumor was so situated as to threaten the safe continuance of the pregnancy, and to jeopardize the life of the mother during labor, some kind of operative interference was demanded in the interest of humanity and of good surgery. Formerly, supravaginal hysterectomy would have been the operation of necessity, but with the evolution of a safer and more comprehensive abdominal technique, myomectomy should become more and more the operation of choice. On account of the many variations in size, location, rate of growth, and manner of attachment of these tumors, no definite and universal rule of procedure could be adopted for their treatment. Every case would have to be managed according to the exigencies which arose as pregnancy advanced, and not a few would present themselves where the safety of the mother and the unborn child would be more conserved by practicing such a masterly inactivity as consisted in watching and waiting for the development of surgical indications, which might never arise in the mind of the conscientious and conservative surgeon.

It was known that many women had gone safely through pregnancy and labor when these otherwise normal processes had been complicated by fibroid tumors. On the other hand, it was known that the safety and existence of pregnancy had been seriously menaced and labor rendered difficult, dangerous or impossible, by fibroid tumors so located, and of such a size and causing such symptoms as to convert a normal condition and a normal process into one of great danger and possible disaster. These dangers to the mother were not passed with the difficult, though successful, delivery of her child. The complicating fibroid might be of the submucous or interstitial varieties, and so interfere with the safe and normal contraction of the uterus as to permit and indeed to cause an uncontrollable post-partum hemorrhage. As these complicating tumors were not amenable to medical or electrical treatment during pregnancy, for obvious reasons, the physician was driven to surgical relief in the class of cases where this remedy was not worse than the disease. As we were barred by existing complicating conditions from practicing many of the minor methods of treatment, such as electricity in any of its various methods of application, oöphorectomy, curetting, ligation of the uterine arteries through the vagina, we were driven to the selection of the major operation in these cases where surgical relief of some kind was imperative. Shall it be hysterectomy or myomectomy? One could not say one or the other in all cases. While one could remove the com-

plicating tumor or the uterus and its contents in nearly all cases, he could only remove the tumor and leave the uterus in a reasonably safe condition, free from the dangers of hemorrhage or abortion, in that class of cases where the tumor was favorably situated for such an operation, to entitle it to be considered as the operation of election. The statement that it would be unsurgical to attempt the removal of an interstitial or submucous fibroid tumor complicating pregnancy by a myomectomy required to be supported by no argument. It was a self-evident fact that such cases would have to be treated, if any operation was required, by hysterectomy. If, however, the tumor was subperitoneal, and especially if it was pedunculated, myomectomy had been done sufficiently often. Under these circumstances, with the improvement of abdominal surgical technique in the last two decades, this had become a comparatively safe operation.

PREGNANCY AND LABOR COMPLICATED BY MYOMATA.

DR. GEORGE TUCKER HARRISON, of New York City, read a paper with this title. The author stated that no general rules can be laid down with reference to treatment, and that each case must be carefully studied in all its circumstances before recourse is had to operative intervention. He said the dangers of this complication of pregnancy as a cause of dystocia were formerly overestimated. The plan of treatment during pregnancy, as a rule, is an expectant one. Formerly, the dangers incident to myomata, complicated by pregnancy, in causing dystocia, were greatly overrated, and hence, in many cases operations were performed which one now knows were contraindicated. It was, therefore, a most important addition to scientific medicine when Hofmeier demonstrated that pregnancy was not affected, as a rule, by the myoma, and that the majority of women thus affected attained to full term, and gave birth to their children with safety. The indications for intervention are furnished by disturbances or conditions which render delay dangerous, as, for example, when the myomatous pregnant uterus becomes incarcerated. The artificial interruption of pregnancy which first suggests itself, when an active procedure is indicated, is attended with grave dangers and should not be entertained. Under these circumstances the expulsion of the ovum may be delayed; there may be uncontrollable hemorrhage; the ovum may undergo decomposition; the portion of the myoma projecting into the uterine cavity may undergo necrosis or gangrene, and the conditions altogether may be favorable for the production of septic infection. When symptoms show

themselves which make a further continuance of pregnancy a menace to life, laparotomy is indicated, either for the performance of a myomectomy or supravaginal amputation of the uterus. The author concurs in the opinion of Olshausen that the ablation of polypi, and especially the enucleation of submucous cervical myomata, should be postponed until the end of pregnancy, because labor may be expected to follow closely upon the operative intervention. Enucleation through the vagina should not be attempted if the attachment extends so far upward as not to be within the reach of the finger. When the tumor is subserous, and has a well-defined pedicle, the author believes that the risk of operation is no greater than that of ovariectomy during pregnancy. The existence of a myoma in itself does not furnish an indication for operative intervention. It is only when symptoms are caused by it which jeopardize life and health that operative interference is justifiable. When, therefore, the disturbances evoked by the presence of the tumor assume a menacing character, so as to make the further continuance of pregnancy undesirable, it may be necessary to have recourse to enucleation *per vaginam*, if it is a cervical myoma, or supravaginal amputation may be indicated, or myomectomy. During labor, if the tumors are high up, the author believes that the policy should be that of masterly inactivity. Myomata which project as polypi into the vagina should be ablated at once. If the tumor is wedged in the pelvis, cautious attempts at reposition may be made, although they are usually futile, if the tumor has shown no inclination to ascend in the unfolding of the cervix. If these attempts do not succeed, and the limitation of space is not excessive, one may still hope that the serous infiltration of the tumor may have softened it to such a degree as to allow the passage of the child. Here podalic version is preferable to the high forceps operation, as delivery can be accomplished more easily and with less injury to the soft parts. When the myoma is, hence, an absolute obstacle to the birth of the child, the Cesarean section is indicated. This operation for such complication is also indicated in the latter part of pregnancy, supposing the child is viable, and dangerous symptoms manifest themselves which threaten the life of the mother.

DISCUSSION.

DR. EDWARD REYNOLDS, of Boston, said that he has had considerable experience with fibroid tumors complicating pregnancy, labor, and the puerperium. His remarks were directed largely to the treatment of large incarcerated fibroids, in advance of the head at or near term.

He has seen ten such cases, but has details of only five. No one of these tumors was smaller than a seven months' fetal head. In three of them the large incarcerated fibroid was kept within the bony walls of the pelvis, so that the finger could be introduced with difficulty between the tumor and symphysis. In each case the woman was either delivered normally or by forceps. Fibromyoma of the non-pregnant uterus becomes, during pregnancy, a soft tumor, and tends to alter its shape, to reduce itself, and to rise until it can be lifted above the pelvis by taxis. Any one who has had much experience with the size of the uterine vessels at term would not unnecessarily rush in and do operations on intraligamentous fibroids, such as these incarcerated tumors were. He protested against operating with a knife on cases of fibroid tumors complicating pregnancy at or near term.

The statement should not emanate from the Society that the members approved of the principle of applying one procedure to hospital patients and another procedure to patients in private practice. He could not allow such a statement as was made by Dr. Coe to go out without criticism. He thinks obstetricians should be very careful to apply one principle in matters of life and death to all patients who come under his charge.

DR. J. DUNCAN EMMET, of New York City, stated that unquestionably certain myomata complicating pregnancy must be removed by myomectomy or by the radical removal of the uterus, while others do not interfere with the course of pregnancy. He expressed his gratification that the essayist had laid stress on his preference for myomectomy over the removal of the uterus, for the reason that the latter is a serious thing in its after-effects, and should be avoided whenever possible.

DR. WILLIAM R. PRYOR, of New York City, said if the tumor or tumors complicating pregnancy were situated in the anterior uterine wall and were very small, they would slide up over the pubis without any trouble. In cases that had not advanced to the seventh month, where the tumors seem to constitute an actual bar to delivery, these tumors, by their softness, accommodate themselves to the situation. On the other hand, retroperitoneal tumors, on account of their situation, demanded operative intervention, as Cesarean section. Some of these tumors were with the greatest difficulty handled through the abdomen. He had in two instances, in one at four and a half months, in the other at five and a half months, operated by a method which he described diagrammatically on the blackboard. This method consisted largely of morcellation of the tumor.

He discussed the value of mammary extract administered to these

women, beginning it early and carrying it through lactation. Under its influence he has seen subperitoneal and interstitial fibroid tumors decrease materially in size.

DR. HENRY D. FRY, of Washington, D. C., spoke with reference to emptying the uterus in these cases, saying he thought the cases are very few in which one would be called upon to do this, or, rather, in which this would be a better line of treatment. The treatment is either expectant or radical, owing to the fact that the tumors which indicate emptying the uterus early are necessarily located in the lower segment of the uterus. The tumors undergo softening and are drawn up above the pelvic brim, thus enabling pregnancy to advance, and finally the child is delivered normally at the end of labor. It is difficult to dilate the cervix where the fibroid is situated in the lower uterine segment around the cervix. If one succeeds in getting out the fetus, some part or parts of it might remain and undergo decomposition, so that it was exceedingly difficult, perhaps impossible, to deal with such cases by the ordinary method of treatment of retained secundines in the uterus. The dangers attending emptying the uterus in the first semester are great. If one succeeds in accomplishing it in a young married woman, he will probably have to go on indefinitely doing so during subsequent pregnancies. He believes we should allow the cases to go on as long as possible, and if the period of viability is reached, if suffering is great from pressure or other reasons, then treatment should be radical, consisting of either myomectomy or hysterectomy. He favors hysterectomy in these cases in preference to myomectomy.

DR. WALTER P. MANTON, of Detroit, Mich., spoke of the rarity of fibroid tumors complicating pregnancy in his experience. Of perhaps five or six thousand cases of confinement, seen in both private and hospital practice, he has probably seen only five or six cases where these tumors complicated pregnancy. In the majority of cases of interstitial submucous fibroids, abortion almost inevitably occurs between the third and fourth months. He has seen many such cases on which he has subsequently operated.

DR. REUBEN PETERSON, of Ann Arbor, Mich., took issue with one or two statements that were made, as, for instance, in the presence of interstitial fibroid tumors complicating pregnancy, myomectomy is contraindicated. His experience does not coincide with that of Dr. Reynolds, that these tumors become softened by pregnancy. He referred to the case of a woman upon whom he had operated some months ago. She was about five months advanced in pregnancy. There was a tumor about twice the size of a fist, situated low down in the pelvis, producing

severe pressure symptoms. He thought it was imprudent to allow the woman to advance further in pregnancy, even though he was able to push the tumor above the brim of the pelvis, but it soon settled back again. It seemed questionable to him whether the tumor could be retained above the brim of the pelvis by any form of support, and as the woman was suffering considerably, he operated. The tumor was interstitial. He did myomectomy, enucleated the tumor, and after he had removed it from its bed apparently the membranes were underneath his finger. Hemorrhage was readily controlled, and the incision closed. The woman went on to full term, and was delivered subsequently of a child. The tumor was not softened during pregnancy.

DR. GEORGE J. ENGELMANN, of Boston, cited his experience and observations of two cases in which softening and disappearance of fibroids had occurred after confinement. In one instance the tumor was quite large, and grew rapidly during the course of pregnancy, but it developed from a hard into a soft fibroid. This tumor disappeared rapidly in the course of four or five months. It was about the size of a child's head. It became very much reduced in size during the time the patient was in the hospital. In the other case the tumor was smaller, and perhaps would not have obstructed labor. In both instances the growths were subserous. He had seen one case of interstitial fibroid tumor that had become submucous, which was enucleated and expelled soon after the placenta. These cases were seen many years ago. He had not seen a similar condition since. He had seen, however, a small fibroid soften and disappear in one case after a violent hemorrhage. He believes that this softening which occurs frequently in the course of pregnancy leads to retrograde metamorphosis and disappearance of the tumor, and therefore practitioners should be urged to use the mammary extract, thus favoring the processes which nature intended during pregnancy and the puerperium.

DR. CHARLES M. GREEN, of Boston, said he had seen two cases of fibroids within a month, in one the uterus having seven fibroids on its anterior surface. They were not large, the largest one not being larger than a hen's egg. He did not see the patient until after delivery had occurred. No trouble ensued. The tumors involuted down, and were scarcely to be felt. The other patient had one quite large pedunculated subserous fibroid. He did not see the patient until delivery was effected. This woman was watched with considerable interest to see what would happen, but she subsequently made a complete recovery, the tumor having diminished in size to that of a hen's egg.

Relative to the retrograde changes that take place in these cases, he

cited a case that he had watched through a second pregnancy, during which the fibroid did not enlarge, and the woman was delivered without any complication. The reason for conservatism in these cases is that the tumors very frequently take care of themselves. No one could say that they always do so, but they generally do.

DR. JAMES CLIFTON EDGAR, of New York City, said these tumors take care of themselves in a large proportion of cases, and cause very little or no trouble. Recently he looked up the statistics for the last fifteen years in the services of the four maternity hospitals in New York City, and while he did not see every case that was confined, he had knowledge of the history of the cases, amounting to approximately sixteen or seventeen thousand cases of confinement in the Emergency and City Hospitals, as well as in his service. Of his own experience, he could recall but half a dozen cases of fibromyomata or myomata that actually caused dystocia, and in a large number of cases the tumors caused absolutely no obstruction which could not be overcome by a difficult version or by a difficult forceps, or by nature with prolonged labor.

DR. ARTHUR W. JOHNSTONE, of Cincinnati, Ohio, said it was seldom that the obstetrician has to do more than to watch the case and guide it to a successful termination. Time and again he has seen cases in which pedunculated fibroids rose above the uterus which had been situated low down, and the patients had gone on to full term without any trouble. His experience was in accord with what has been said with reference to the shrinking of fibroids after labor. He has seen a fibroid on the fundus of the uterus which was as large as a baby's head at the time of labor, yet which, six months afterwards, was not larger than a turkey's head. Subsequent pregnancy in these cases had shown that the tumors gave no further trouble.

DR. BEVERLY MACMONAGLE, of San Francisco, Cal., said that there ought not to be a distinction made between private and hospital patients; that each individual case should be judged according to its merits, and each individual treated accordingly. He was entirely in accord with the idea expressed by Dr. Coe, that all patients are equal, so far as the physician is concerned, and should be treated equally with the conscientious idea in view for the good of the patient.

DR. COE, in closing the discussion on his part, stated that his experience appeared to be somewhat different from that of others, yet he could not believe that the cases under discussion were so rare as represented, or that his experience was so exceptional.

He thought the statement made by Dr. Reynolds ought to be modi-

fied. One cannot go ahead in the case of a private patient the same as he could with a hospital patient, for the reason that the financial consideration did not enter into the case. In private practice, where one had a number of consultants to deal with, and a number of different things to consider, he could not do the same with that case that he could with a hospital case. Hospital cases were oftentimes more serious than private cases, and therefore the surgeon felt the responsibility more as patients placed themselves in his hands. The same rules could not be applied to private patients that are applied to hospital patients.

DR. REYNOLDS said he hoped no gentleman present would suppose that he meant to imply that Dr. Coe or any other member would prostitute his conscience for a fee. He made no personal application.

DR. HARRISON, in closing the discussion, said he was glad to notice that the general consensus of opinion is in favor of conservatism in the treatment of the class of cases under consideration. The arguments that had been advanced by Dr. Engelmann and others were of paramount importance, and during the puerperal state retrograde metamorphosis of these tumors was to be expected. He had observed it.

As he is connected with the New York Infant Asylum, he has had an opportunity of seeing a large number of women belonging to different races. This asylum is largely patronized by colored people. He emphasized the importance of making a distinction between the white and colored races. In negroes myomata are exceedingly common, and he has observed a number of cases of negro women in which myomata complicated pregnancy.

COMBINED BISECTION OF TUMOR AND UTERUS WITH PARTIAL ENUCLEATION OF BISECTED TUMOR IN ABDOMINAL HYSTERECTOMY FOR LARGE FIBROID TUMORS IN BODY OF UTERUS.

DR. GEORGE-H. NOBLE, of Atlanta, Ga., read a paper with the foregoing title. The author stated that large fibroid tumors filling the pelvic cavity and extending laterally above the pelvis to the walls of the abdomen are not infrequent. Their removal by hysterectomy, when the broad ligament is first ligated from above downward, is a procedure often beset by many mechanical difficulties. The author reported a procedure which greatly expedites the removal of such fibroids and gives the operator at all times excellent control over the blood supply of the parts. The operation has as its underlying principle the bisection

of tumor and uterus, together with subsequent partial enucleation of each half of the tumor separately.

In abdominal operations of this kind he has been accustomed to use, instead of sponges, a special retainer to keep the intestines and omentum well up out of the way of the surgeon. This retainer is made of several layers of gauze stitched snugly over hard rows of absorbent cotton so as to make a pad some fifteen inches long, two to four inches wide, and three-fourths of an inch thick. A thin layer of absorbent cotton is rolled tightly into small rolls about three-fourths to one inch in diameter and then strong thread or tape is wound around them firmly to increase the density and stiffness. These are cut into lengths of five inches and placed in three rows of three rolls each, and covered on each side with three or four layers of cloth. The gauze is stitched around the edges first, and then between the rows of cotton, and lastly across the pad in two places between the ends of the cotton rolls. This last makes a hinge arrangement, which permits bending or shaping the retainer in the form of a semicircular dam above the pelvis, which holds the intestines and omentum out of the field in a most satisfactory way. It has the additional advantage of not being easily lost in the abdomen.

When the abdomen has been opened and the tumor delivered through the incision, the retainer is introduced so as to clear the pelvic field for the manipulation to follow. The broad ligaments and coruna of the uterus are caught with morcellation forceps, as described by Kelly in bisection of the uterus. The ovarian arteries are thus compressed, and traction on the tumor upward checks the flow through the uterine arteries. The large veins on the surface of the fibroid and uterus, except those obstructed by the forceps, at once become empty. The tumor is rapidly bisected in the median line. If it rises sufficiently high, a large hip-joint amputation knife is thrust through the cervix or body of the uterus, and the tumor cut open from below upward, the bladder having been previously pushed off. If traction on the tumor does not raise it high enough to allow the knife to pass through on the plane of the brim of the pelvis or a little below it posteriorly, its point will be difficult to catch and guard by the hand placed behind the tumor. In such circumstances the section is best done from above downward. For this purpose a large scalpel is used. Rapid strokes of the knife quickly divide the tumor into two equal parts, the incision continuing downwards in the median line of the uterus to the cervix. The bleeding is insignificant.

Now, with the tumor cut into two halves, the operator and assistant working at the same time on opposite sides, partially enucleate from

below upward each section of the tumor from its capsule or bed in the uterus. The halves are rotated, in the process of enucleation on their outer (upper) cut margins, the inner (lower) margin describing a semi-circle in transit. At this stage of the operation the two halves of the tumor are lying on opposite sides of the patient's body, the flat cut surface looking downward and the convex enucleated surface looking upward. Both sections are connected by long pedicles to the uterine stump. It being understood that the original incision which bisected the uterus has been carried as far down as the cervical region, lateral cuts, after Kelly's method, sever the uterus proper from the stump and expose the uterine arteries which should be tied. The remaining portion of the pedicle now consists of parts of the broad ligaments only and having been compressed with the angiotribe are tied with cat-gut and the mass on either side cut away. The edges of the cervical stump are then stitched together and the adjacent raw surfaces are covered by stitching over them the peritoneum of the bladder and Douglas' pouch. If, however, in the place of supravaginal, panhysterectomy, is to be performed, the bisecting incision is continued in the median line through the cervix into the vagina, completely severing the uterus and tumor into two distinct parts. After the incision made by the knife reaches the cervix it is best continued with a pair of sharp pointed scissors. Immediately following the partial enucleation described, one blade of the scissors is passed through the cervical canal and the point of the other blade pierces the vaginal wall behind the cervix. The posterior wall of the cervix is then split open, the incision extending a short distance down the vagina. The anterior wall of the cervix is opened in the same way with the finger in the vagina as a guide; one prong of the scissors pierces the vagina between the cervix and bladder; the other enters the vagina through the incision last made.

Excision is completed by grasping the vaginal portion of the cervix on one side with a small pair of morcellation forceps making firm traction and cutting from below upward, first severing the cervix from the vagina, then cutting close to the uterus, avoiding the ureters and uterine arteries. When about half of the broad ligament has been severed (the lower segment), one side of the bisected uterus may be turned out of the abdomen. Similar treatment of the opposite side clears away all obstructions to manipulations in the abdomen and pelvis, greatly facilitating ligation of the uterine arteries held in the grasp of compression forceps. If the pedicles are thick, they should be clamped external to the ovaries with the angiotribe and subsequently ligated in the track of the instrument. It will be observed that each half of the

uterus is removed very much after the manner in which Doyen removes that organ in one piece. Bleeding from the vaginal wall may demand a few ligatures or stitches. When this has been looked after, the peritoneum is stitched over the raw surfaces in the bottom of the pelvis and the remainder of the operation finished in the usual manner.

The advantages of combined bisection of the tumor and uterus with partial enucleation are saving in time, decreased loss of blood, increased working space, easy manipulation, and safety against injury to the ureters and uterine arteries. The advantage of time saved is apparent, since prolonged operations contribute to shock.

ENUCLEATION OF INTRALIGAMENTOUS AND POSTPERITONEAL FIBROID TUMORS IN THE DEEP PELVIS.

DR. NOBLE also discussed this subject. He stated that since the title of his paper was announced on the program, he had received a reprint of a paper from Dr. Pryor who had anticipated him in the treatment of intraligamentous tumors or postperitoneal fibroids in the deep pelvis. He indorsed the method of Pryor. He said intraligamentous tumors are partially enucleated by penetrating their capsules from the cavity of the uterus after bisecting the organ. They should be turned out with the fingers and morcellation forceps, then drawn up and rotated outward. The portion of the tumor attached to its capsule everts the latter as it is drawn out of the abdominal incision, so that it may be included in the ligature placed around the upper border of the broad ligament. In this way the capsule in some cases may be entirely removed, and in others, parts only are cut away, and if included within the ligature of the pedicle, avoids the necessity of suturing the edges of the capsule. This necessarily confines manipulation within the capsule of the tumor, preventing injury of the ureters, blood vessels, and oozing from small vessels, which occasionally occurs when the tumor with its capsule is removed from the loose connective tissue of the broad ligament. The latter is most apt to take place when the uterine arteries are encountered at unexpected points, on account of their unknown relation to the tumor. He said that Dr. Pryor completely enucleates the tumor and sutures the capsule while he partially enucleates the tumor, using its attached portion to pull up the capsule, transfix and tie off, in part or entire, with the ligature of the broad ligament.

DISCUSSION.

DR. WILLIAM R. PRYOR, of New York City, spoke of his previous work embodied in a paper published by him in 1900. In dealing with the tumors under consideration, he spoke of studying the manner in which large fibroid tumors distort the anatomy of the parts, and of the direction in which they revolve and also pointed out the great difficulties attending the removal of intraligamentous or retroperitoneal growths lying between the bladder and uterus, on account of their marked fixity and asymmetry. He said these tumors can be enucleated by penetrating their capsules from the cavity of the uterus, after bisecting the organ. The capsule is sutured after the enucleation of the tumor.

Those who are studying the subject of fibroid tumors of the uterus, and how to deal with them, could receive many valuable suggestions as to the morcellation of these tumors, both from partial and total hysterectomy, by reading an article published many years ago by Pean's assistant.

DR. E. W. CUSHING, of Boston, inquired of the essayist as to the risk in opening the cavity of the uterus in cases of large fibroid tumors.

He also made reference to what had been said by Dr. Pryor in regard to the work issued by Pean's assistant. In Martin's book, which the speaker translated in 1887, this method of bisecting fibroids is described, and any one who has seen Martin operate will realize that it is more convenient to remove them by bisection.

DR. J. WESLEY BOVÉE, of Washington, D. C., called attention to two classes of cases in which these operations are not free from danger of injuring the ureters. There are a large number of cases of fibroid tumors of the uterus reported, through the tissue of which passes the ureter some distance from the cervix, not running around it, as is generally taught. In this class of tumors there is no way he knows of to get rid of the danger of injuring the ureter except tracing the ureter to the tumor. In this way one would know where it is located, and thereby prevent injury of it.

There is another class of tumors, the migratory fibroids in the broad ligament, in which splitting of the uterus does not materially assist in the operation. When the fibroids are located markedly on one side, crowding the body of the uterus to the other side, there is marked asymmetry. In such cases he can hardly conceive how splitting of the uterus can be of any great assistance in removing such tumors. He then mentioned a method of removing these growths.

DR. I. S. STONE, of Washington, D. C., said a few years ago Dr.

Kelly described a similar method. He has tried the method very much as represented by the essayist in a case where he thought the tumor was suitable for this method. However, it was impossible to remove the tumor. He began by dividing it from above, and the experience he had with this operation will cause him to think a good while before he attempts it in the next case.

He rose more especially to commend the method and to direct attention to the fact that Dr. Rufus B. Hall, of Cincinnati, Ohio, had practiced a similar method in removing cysts of the broad ligament.

DR. NOBLE, in closing the discussion, said, in reply to the question propounded by Dr. Cushing, regarding the risk in opening the cavity of the uterus, he used to think there was a good deal of danger in so doing, but he has opened the uterus quite a number of times in cases of submucous fibroids, and has gotten the whole mass outside the abdomen, and in so doing he does not anticipate trouble from infection.

He dwelt on the importance of adopting this method as a routine measure in large fibroids that are difficult to reach, and which fill up the abdomen. The routine measure of bisecting the tumor, turning it out, getting rid of the mass, placed the operator in a position to reach the uterine artery at the cervix.

THE RELATION AND CO-RELATION OF GYNECOLOGIC AND NERVOUS AFFECTIONS.

DR. CHAUNCEY D. PALMER, of Cincinnati, Ohio, read this paper. The intimate history between the nervous system and other parts of the body in disease is only in accordance with the general law of morbid action. The most varied phenomena, trifling apparently, yet serious at times, may result from the same pathologic entity.

This relationship the author looked at in two ways:

1. What influence do female pelvic diseases have in the induction of nervous disorders?
2. What affections of the female pelvic organs arise from nervous derangements?

While many hysterical women have no anomaly of the sexual organs, it is affirmed that a certain proportion of them do have some imperfection in the development of their sexual apparatus, especially the uterus; hence the justifiability of an oöphorectomy in some such cases. Should the sexual organs be diseased in hysterical women, it cannot be said that the hysteria is secondary. Even then, psychic causes are at work, more potent than the local disease.

The author said that errors in diet, in general hygiene, in lack of rest, and in various indulgences of the mind and body in girlhood lead to physical anomalies, and give rise to abnormal mobilities of the nervous system. The functions of ovulation and menstruation play more than their ordinary rôle in the inauguration of nervous phenomena.

The etiology of many pelvic diseases depends more on individuality than on special causes. Inheritance is an equation which cannot be overlooked. Every woman is the outcome and the product of her own ancestry. A defective strength, a feeble tone of body, inadequate to maintain a normal equilibrium between the generation and the expenditure of energy, come from inheritance, a misdirected schooling, a poor or neglected hygiene, misuse and mishaps. Uterine and ovarian diseases cause nervous disorders, and their rectification will cure the reflex disturbances. All gynecologists appreciate how numerous and pronounced at times are the reflex neuroses from a cervical laceration. For instance, a mother has had a constant pain over the sacrum, in her left intercostal region, a stubborn headache, with visual disturbances, and withal is hysterical at times, and always more or less neurasthenic. All of these reflexes are in time, many of them promptly, effaced by a judicious and skilful repair of the old tear, with always the thorough excision of all of the offending cicatricial tissue at the bottom of the rent. No pelvic surgery is more eminently satisfactory, not only in the relief of all local symptoms, but in the abatement of various neuroses, unmistakable and otherwise intractable. A limited amount of minor gynecologic treatments is often essential, preceding or following surgical operations. The same may be all that is required in other cases, but if such manipulations are too frequent or too long continued, they do harm in highly sensitive and emotional natures. The same remarks apply to the much-abused use of vaginal injections.

Insanity has been promptly relieved by gynecologic operations, and it has immediately followed them. Such sequelæ, then noticed, are probably more common than after other operations. No surgical procedure is to be considered for insane women unless warranted on the sane. None should be neglected in cases of insanity, whether for causative lesions or not, if bodily comfort of, and diminished care for such are reasonably assured. An exact understanding of all pelvic conditions of insane women should be obtained early in their management, and in the presence of one or more witnesses.

In the treatment of women for the special diseases of their sex, the author thinks there is too much tendency to place undue stress on real or supposed lesions of her reproductive organs. This is particularly

true in reference to some so-called ovarian affections. Gynecology of to-day would not amount to much without an appropriate surgery, but he thinks that indiscreet surgery, like over-medication, may be an abuse. Every theory in medicine must be the outgrowth of an extended experience. "Knowledge comes, but wisdom lingers."

DISCUSSION.

DR. WALTER P. MANTON, of Detroit, Mich., said that this was a subject in which he had been interested for a number of years. Three or four years ago he published a paper in which he gave the results of his examinations of a number of insane women, in reference to the frequency of pelvic disease, and found that local pathologic conditions of the pelvis were frequent in that class of cases. He has never seen a case of insanity which could be traced directly to any pelvic or abdominal lesions. Occasionally he sees cases of post-operative insanity. He has gone over the asylum records and of a large number of cases he has been able to find but two in which the mental condition was due to operative intervention. He excluded puerperal cases of insanity in referring to such disorders. Fifteen years ago, when he began his work in this field, he thought possibly by the removal of the tubes and ovaries the mental condition of patients was aggravated by the pelvic disease, and it was thought the removal of these organs would relieve the mental condition. This, however, was soon given up after operating two or three times, and at present operations are done only for the relief of pathologic conditions. He has never seen a case of insanity cured by operative measures, although one or two cases have been reported from asylums where relief followed operations. In every instance in which an insane woman is suffering from pelvic or abdominal disease, there is always improvement both in the mental and general condition of the patient following the removal of the local irritation.

DR. PHILANDER A. HARRIS, of Paterson, N. J., could recall but one instance in which there was evidence of insanity or of fixed delusions appearing in the life of the individual at one particular time, and as the result of one condition. He cited the case of a young married woman, who, being of cheerful disposition, upon becoming pregnant, became taciturn and in bad humor when spoken to. She lost interest in her ordinary household duties. She went through her first pregnancy with a great deal of trouble to her husband and friends. At one time she was threatened with suicidal mania, but after the birth of her first

child, so far as could be learned, her cheerful disposition returned. Two years subsequently she again became pregnant, but in the interval between the pregnancies there was nothing observed either by her husband or friends which would indicate that she was mentally unbalanced. At the second pregnancy she again became taciturn and morose, and her physician, after learning this to be the case, produced abortion, and terminated pregnancy shortly after which her usual cheerful disposition returned. Still later her physician excised the proximal ends of the tubes to prevent subsequent pregnancy. This case illustrates that there was nothing wrong with the mentality of the patient prior to her first pregnancy.

DR. J. DUNCAN EMMET, of New York City, said he has seen a great many cases of hysteria associated with lacerations of the cervix, and of other injuries connected with the genital organs. When hysteria is habitual, when it becomes a chronic habit, it generally has for its basis a genital lesion. Its connection with lacerations of the cervix has been clearly shown, in that it will disappear after the lacerations are repaired.

A day or two since he operated on a young woman, who, about six months after her first child was born, was suddenly seized with an almost irresistible desire to murder her child, and this feeling recurred again and again for nearly a year. The woman was subject to frequent spells of general mental depression. She had no idea that there was anything the matter with her genital organs, nor had she any idea that she had a laceration of the cervix. He amputated the cervix a day or two ago, and is firmly convinced that she will be entirely relieved of symptoms in the course of six months.

DR. WILLIS E. FORD, of Utica, N. Y., emphasized the importance of distinguishing between the fact that neurasthenia is not produced by any particular local lesion, and that it is more common in women than in men. It is not produced by any particular disease. The actions of life bring forward any weaknesses of the nervous system which are inherent in man or woman. He said there are no cases so intractable to treatment as sexual neurasthenics. It is a mistake to believe that neurasthenia is produced by a slight pelvic lesion. He presented to the Society years ago a series of seventy-five selected cases of trachelorrhaphy, the operation having been done for the relief of nervous symptoms, without any marked ultimate results except what might be attributed to improvement in the general health. He thinks the same holds true to-day. According to his experience and observation, relaxation of the vaginal outlet produces infinitely more nervous disturbances than

any condition about the cervix. The cervix might be torn or the uterus displaced, yet if the woman was in good health, it would hardly be noticed; but relaxation of the perineum, with ptosis of the organs above, produces an amount of disturbance entirely out of proportion to a similar lesion in the uterus.

DR. EUGENE C. GEHRUNG, of St. Louis, Mo., said that his experience was contrary to some of the opinions advanced, that minor gynecologic disturbances do not infrequently cause different degrees of insanity. He recalled many cases of hysteria and melancholia, so designated by experts of insane asylums, which were relieved and cured by the application of pessaries. In some instances he thinks severe cases of amenorrhea and dysmenorrhea may be the cause of the insanity. A more frequent cause, perhaps, is metrorrhagia or menorrhagia, especially if of long duration.

DR. ARTHUR W. JOHNSTONE, of Cincinnati, Ohio, said he thought the profession was entirely off as to what really causes neurasthenia. He mentioned the case of a young man who, for a considerable time, was markedly neurasthenic and went about on crutches. His condition was found to be due to a stricture of the urethra. Behind the stricture was an ulcer, and from this ulcer he was getting constant absorption of ptomaines. After restoring the caliber of the urethra, and successfully treating the ulcer, the young man was cured. His crutches were thrown away.

DR. GEORGE TUCKER HARRISON, of New York City, said the relation of gynecic disease to insanity is interesting. He has seen a number of cases of insanity in women, but in only a few of them could he directly attribute the insanity to a gynecic affection. After a profuse hemorrhage, he had seen symptoms of mental derangement in persons in whom there was a latent predisposition to insanity, which were called into activity by the disease. What particularly interested him is the relation of post-operative insanity to gynecic disease. He mentioned a case of Cesarean section in which he assisted Dr. Grandin. The operation was done skilfully; there was no sepsis, but the patient died from insanity after the operation.

DR. PALMER, in closing the discussion, expressed his gratification that his paper had elicited so much discussion. He believes that not enough attention is devoted to this subject in everyday work.

As to reflex disturbances in hysteria, there is no disease inside of the pelvis of a woman which, in its primary and secondary effects, produces the amount of reflex disturbance that a lacerated cervix does. The profession, therefore, is indebted to Dr. Emmet for calling attention

to, and emphasizing these reflex disturbances, and effecting a cure by the proper repair of lacerations.

THE ETIOLOGY, PATHOLOGY AND TREATMENT OF PUERPERAL SEPSIS.

DR. HIRAM N. VINEBERG, of New York City, contributed this paper. He said that severe puerperal sepsis might be caused by a variety of pathogenic germs. The variety of germs found in the uterine discharge in a given case was no criterion of the severity of the case, and formed no safe guide as to the prognosis or as to the treatment to be adopted. Bacteriologic examination of the blood was of little value, either from a prognostic or therapeutic standpoint. The treatment of puerperal sepsis must be based chiefly upon the clinical history and physical signs of each individual case. Wounds of infection in the perineum, vagina or cervix were to be treated on general surgical principles of irrigation and drainage. Curettage was indicated where there were evidences of placental decidual residue in the uterus, independent of the variety of bacteria that might be found in the uterine cavity. In those rare cases in which adherent and sloughing placental tissue could not be removed, either with the sharp curette or fingers, hysterectomy was indicated, providing the patient was not already moribund. Hysterectomy was also indicated in septic endometritis, or infection of the placental site, so long as the infection was still limited to the uterus, and when the symptoms steadily grew worse, in spite of uterine irrigations, with or without curettage and appropriate hygienic stimulating treatment. In abscess of the uterus, the abdomen should be opened, and, when feasible, the purulent foci were to be drained and the uterus preserved. If the uterus was studded with small abscesses, hysterectomy was indicated. The abdominal route was to be preferred to the vaginal route for hysterectomy. If the infection passed from the uterus into one or other tube, and set up a violent grade of inflammation, the abdomen should be opened and the infected tube removed before a general peritonitis developed. When the infection passed through the uterus and set up a general peritonitis, a case might occasionally be saved by a timely abdominal section and drainage. In cases of parametric exudates, the treatment should be of a conservative nature, and surgical intervention was indicated only when there were evidences of pus formation. In obscure cases in which the pathologic lesion could not be determined, and the symptoms were steadily growing worse, it might be advisable to open the abdomen to search for a hidden purulent

focus, or for a circumscribed slough of the uterus. The procedure proposed by Trendelenburg, and executed by him and others, of ligating the pelvic veins when they became infected and thrombotic, was worthy of further trial.

DISCUSSION.

DR. WILLIAM R. PRYOR, of New York City, took issue with the essayist as to the significance of certain pathogenic germs. Very rarely in mild cases of puerperal sepsis is the streptococcus found present, whereas in the severe cases streptococci are present. In the mild cases other kinds of germs are found, chiefly staphylococci and saprophytic bacteria. He has learned from experience that the streptococcic form of puerperal sepsis is the one that demands careful attention, as upon the number of streptococci found will depend very largely the character of the sepsis. Epidemics of puerperal infection vary materially. In one epidemic the mortality ranges from two to three or possibly five per cent; in another there will be a mortality of twenty-seven per cent.

Relative to the use of the curette, in a case of local infection, to inflict trauma over the whole inside of the uterus with this instrument, usually meant the dissemination of the infection, and he believes it is bad practice.

He condemns hysterectomy unqualifiedly in patients suffering from septicemia, saying that nothing can be gained by the removal of the uterus.

DR. EDWIN B. CRAGIN, of New York City, said he has been working at the problem of puerperal sepsis from a little different standpoint than that of Dr. Pryor, inasmuch as he had the responsibility of the Sloane Maternity Hospital. Having fourteen hundred cases at the Sloane Maternity annually, he is brought in touch with obstetrics from the practical side, but he is free to admit that occasionally there is a case of infection, because cases are admitted undelivered, no matter whether they have been handled by midwives or by beginners. They are admitted whether they are just in labor, or whether they have been in labor for several days. Occasionally a case or two terminated fatally from infection, although both pathologist and bacteriologist were unable to find streptococci. In a number of severe cases of puerperal sepsis varieties of bacteria are found in the uterus, but usually the most severe cases show the presence of the streptococcus.

As to the practical management of infection in the wards of a maternity hospital, he put forward two things above everything else.

First, to make sure the uterus is empty. *Second*, in making sure that the uterus is empty, to do just as little damage to the inside of the organ as possible. This brings up the question of curettage, and he is in the habit at the Sloane Maternity of dividing curettage into two parts. *First*, manual curettage, and, *second*, instrumental curettage, always preferring the manual where this is possible. First of all, the obstetrician should make sure that the uterus is emptied with the hand or finger, if the temperature does not decline to normal or thereabouts under the use of intrauterine douches. If one cannot remove the débris from the uterus with the finger, the curette should be used as a substitute for it. In using the curette, care should be taken not to open up new avenues and thus cause a general infection. Patients who are suffering from toxemia, or from what is sometimes called sapremia, are in a condition favorable for the commencement of septicemia if unrelieved.

Relative to hysterectomy, or a severe abdominal operation, he believes it is seldom indicated in maternity hospitals. Cases of pus tubes and abscesses in the uterus should be operated upon.

DR. J. WHITRIDGE WILLIAMS, of Baltimore, Md., said his views concerning puerperal sepsis are pretty well known. He could not agree with the essayist that a bacteriologic examination is of very little value, because the more he has seen of puerperal infection, the more valuable he considers the results of a bacteriologic examination of the uterine lochia and of the blood as well. In many cases there is no definite indication for treatment from such a bacteriologic examination, yet there is absolutely no doubt in his mind that important information is revealed as to the condition of the patient. It is always a great comfort to him, when he sees a woman with a high temperature and rapid pulse following labor, to know whether the uterus contains bacteria and what sort of bacteria. If he finds there are streptococci present, and the condition is serious, he is very much alarmed about it. If the gonococcus is present, he does not bother very much about it. If the colon bacillus is present, he bothers very little about it, and if the ordinary putrefactive organisms are found, he does not bother at all about the case.

He cited the case of a woman whom he saw with a severe infection. Cultures were taken from the uterus and were found to be sterile, and exactly what the condition was he did not know. In that case a bacteriologic examination was of no value, but, he said, in spite of a few exceptions of that kind, these examinations did much good, and had saved him much worry.

Considering the treatment, he has several times expressed his ideas

as to curettage. If a woman has streptococcic infection, the curette is harmful, and he believes the bad results of many practitioners are due altogether to the practice of curetting such cases. Whenever he sees a woman with streptococcus infection, he does not think of using the curette, but simply gives her a single douche of sterile salt solution, and leaves her alone. On the other hand, if he finds the uterus contains necrotic material, particularly if the infection is due to putrefactive organisms, he cleans out the uterus with his finger. Even then he does not curette. The only time he uses the curette is after cases of abortion.

Passing on to the operative treatment, he thinks it is extremely limited in cases of puerperal infection. In those cases in which there is pus formation or pyosalpinx, or a similar condition following abortion or labor, operation is indicated as under other circumstances. Likewise, in the rare cases in which there is abscess formation in the uterine wall, hysterectomy is indicated. But leaving out this class of cases, he believes operative intervention is very much restricted. He has seen but two cases in which he feels operation is distinctly called for. These were detailed.

DR. MATTHEW D. MANN, of Buffalo, N. Y., said there was one germ which sometimes attacked the puerperal woman which had not been mentioned, and this was the gonococcus. Cases of gonococcus infection generally show themselves rather late, that is, the symptoms come on as late as the tenth day or after that. Usually they are not very severe. Recently he saw a case of sufficient interest to put on record. The patient, at the time he saw her, had been sick for more than a week. Her temperature had been ranging from 107° to 108° for a number of days before he was called in consultation. Strange to say, her pulse was only 120. Examination of the discharges showed a pure culture of the gonococcus. No other germs present in any of the secretions. He thought possibly the affection would localize itself and the woman would recover, but the joints and heart were affected. The patient eventually died, and her temperature just before death reached 111° . Such cases are rare. It is the only one he has ever seen, although he has seen cases of gonorrheal infection following labor that have localized themselves in the tubes, and have recovered.

DR. W. GILL WYLIE, of New York City, said that his experience with puerperal infection dated back twenty years. At that time very little was known in regard to the surgical treatment of these cases, and most of them were so invariably fatal that it was expected eight out of ten cases that came to the hospital with this condition would die, and physi-

cians were ready to sign death certificates. Surgical intervention in these cases had revolutionized the treatment. Of his first nine cases treated in Bellevue Hospital, seven were cured by local treatment. He believes a great deal can be done in the worst forms of the disease. The uterus ought to be emptied in almost every case where the infection is due to the streptococcus. His experience in the past has been that very few of these cases are lost if thoroughly treated. After emptying the uterus, one should use ordinary saline solution for the purpose of washing away the effete material on which the germs feed. Drainage is a very essential feature if there is material left in the uterus. If the uterus is not emptied of the material that accumulates in it, it becomes a fertile soil for the development of bacteria.

As to operative procedures, he is satisfied that an expert surgeon, if he sees the cases early enough, even in the worst forms of puerperal infection, where the Fallopian tubes are involved by abscess formation, can save most of them by vaginal hysterectomy and drainage.

DR. EDWARD P. DAVIS, of Philadelphia, Penn., laid stress on the value of a bacteriologic examination in these cases. With reference to the treatment of puerperal infection, the general surgical proposition holds good, namely, that pus should be evacuated wherever it forms; hence incision of the posterior cul-de-sac in pelvic abscess, followed by the use of gauze packing, or without it, is indicated. Hysterectomy has practically nothing definite to support it except in rare cases of adherent placenta, which are a curiosity in literature. A method which is attended with excellent results, where irrigation has failed, consists in opening the abdomen, inspecting the uterus, tubes and ovaries, freeing adhesions, and if a collection of pus is found in the tubes, draining with iodoform gauze carried through into the vagina, separating the organs from abnormal adhesions. The administration of normal salt solution is admittedly of great value, whether used by intravenous transfusion or in the form of rectal enemas, or by hypodermoclysis.

He repeated the dictum of Leopold, that the surgical treatment of puerperal sepsis at present should be conducted on the one principle of the evacuation of pus or the drainage of abscess, and that hysterectomy is only indicated in those cases where the adherent placenta can be removed by no other method.

DR. MALCOLM McLEAN, of New York City, said he has found that curettage has become a uniform method of treatment in the hands of the average obstetrician, and even the sharp curette was used in many cases, the consequence being that the mortality has been increased enormously in septic cases. Emptying the uterus is an absolute neces-

sity, especially where there is evidence of putrid absorption, attended with chill and high temperature. The endometrium should be left alone as much as possible. The intrauterine irrigation tube has its place in washing out the detritus, but he questions the propriety of safety of repeating these washings frequently. He recommends the use of iodine water for douching.

DR. HENRY D. FRY, of Washington, D. C., said the practice of the Columbian Hospital, where they have a large number of maternity cases, in the beginning of sepsis, where the infection is apparently confined to the uterus, is to thoroughly cleanse the uterus, and, after having taken a culture, active treatment of the uterus is suspended until the result of the culture is known. If there are retained pieces of placenta or blood clots, attended with a foul odor, producing infection, the indication for cleaning out the uterus is clear. On the contrary, if the culture shows the presence of the streptococcus, staphylococcus, colon bacillus, gonococcus, or any of these infective agents, the uterus is let alone, and particularly in cases of streptococcic infection he believes the use of the curette does a great deal of harm. If the streptococci infect the musculature of the uterus, one cannot possibly reach the infection with the curette, but in the majority of cases of streptococcus infection, the area is localized. It is not general. Nature attempts to protect the patient by throwing out a protective zone of inflammatory tissue in which there are a number of leucocytes and the streptococci are kept out. If the curette is used, this protective zone is broken down, so that the streptococci are enabled to gain entrance to the system and cause a general systemic infection. In cases of criminal abortion, he has repeatedly seen cases with septic conditions doing fairly well, yet after the use of the curette some of the patients died in the course of a few days.

DR. ROBERT A. MURRAY, of New York City, said there is a medium ground to take with reference to the use of the curette, and also as regards irrigation in the treatment of puerperal sepsis. If any member of the Society were to see a case of puerperal sepsis, he questions whether the first impulse would not be to find out first what was in the uterus, and if there were débris in it, to detach it with the finger, if possible, or the curette. A good deal depends on the nature of the affection. When one treats a case of gonorrheal infection, he does not simply give one injection and leave the patient alone. When there is infection of the uterus, the uterine cavity should be washed clean and kept so, and in certain cases it is very essential to resort to free irrigation. He has seen a number of cases of infection from lacerations of the vagina following the application of forceps, yet after thorough disinfection and

cleansing of the uterus, the patient got along fairly well. Those who were desperately sick had to be nourished and strengthened. Septic patients had a chance to recover without surgical intervention.

DR. HERMAN J. BOLDT, of New York City, believes that a bacteriologic examination of the secretions of the vagina or uterus, or a bacteriologic examination of the blood, gives no definite indication whatever, because the patients usually have a mixed infection, streptococci and staphylococci being found in the secretions of the uterus. These cases manifest mild symptoms, so that surgical intervention is not indicated. In all patients who come under his care, examinations of both the secretions and of the blood are invariably made. In some of the patients who show bacteria in the blood he finds pure streptococcic or pure staphylococcic infection, and because of the general condition of the patients, which does not indicate the necessity of surgical intervention, they are left alone, and recover. On the other hand, very many patients show nothing in the blood, yet death ensues, so that as the result of accumulated experiences, a bacteriologic examination in such cases does not give a clue as to the indications for treatment.

He does not believe hysterectomy is of any avail in the severe cases of puerperal sépsis, particularly the *fourdroyant* form, where the patient dies within a few days.

DR. SETH C. GORDON, of Portland, Maine, believes that surgical treatment in cases of puerperal sepsis is undertaken too early. If there is abscess or pus in the Fallopian tubes, they ought not to be opened until one is quite certain that he can make a straight incision from the vaginal vault into the abscess cavity, without having any doubt as to whether the pus tube is united to the top of the vaginal wall. Every time an abrasion is made in the uterus with the curette or knife, in the vagina or anywhere else, unless the operator goes straight to the point of infection, he opens up a new avenue of infection. He has seen a number of cases of puerperal sepsis in consultation, and said usually the attending physician is under the impression that some surgical work is necessary. The attendant usually concludes to do a vaginal hysterectomy, to open the vagina and remove a pus tube, to curette the uterus, or to do some other operation. This is all right in pus cases, when one is reasonably sure that he can make a direct opening into the pus tube itself, and not open up a new point of infection by so doing. He thinks the use of the curette ought to be largely out of date. He believes in repeatedly washing out the uterus with saline solution. He has seen two or three cases reinfected at new points simply because an effort was made to reach a pus tube which was not ready to be opened.

In his opinion, surgical intervention is to be carefully guarded and should be undertaken rather late in the case.

DR. H. G. WETHERILL, of Denver, Col., by invitation, said it is necessary to make a distinction in the classification between infection which occurs after an abortion and infection which takes place after labor at term. In one instance the uterus contains considerable detritus, which must be removed. In the other case the use of the curette is not necessary.

He does not think the subject is complete without alluding to a method of treatment which was presented to the profession several years ago, but which has not been generally adopted. He alludes to the alcohol method of irrigation, or the Caruso method, which was brought to the attention of the profession by Dr. Edward J. Ill, of Newark, N. J., seven or eight years ago. This method depended on one or two things. First, it depended upon the localization of the original point of infection; second, its success depended upon drainage, and in referring to drainage, the author did not mean drainage by gauze, but drainage with a tube.

(To be continued in next number.)

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

STATED MEETING, APRIL 17, 1903.

The President, DR. CHARLES S. BACON, in the Chair.

UNRUPTURED EXTRAUTERINE PREGNANCY.

DR. HENRY BANGA reported this case. When he first saw the patient the uterus was retroverted and a mass was felt in the left side of the pelvis. During a period of three weeks the uterus gradually came forward, and about two days before he operated it was completely anteverted and well out of the pelvis. The tumor appeared to grow very rapidly. He concluded it was an extrauterine pregnancy. Hemorrhage into the sac seemed out of the question, because there was no evidence of a sudden loss of blood. He found the sac unruptured, inside of the tube, and there were no adhesions.

CASE OF LITHOPEDION.

DR. HENRY BANGA also reported a case of lithopedion. He saw the patient off and on for six months, and thought she had a fibroma. He could feel hard places in the tumor which he took to be calcified masses. The mass seemed intimately connected with the uterus. The patient consulted him because of pain in the abdomen, which he thought might be occasioned by adhesions. When he opened the abdomen, at first he thought the tumor was a part of the uterus. After removing the adhesions surrounding the tumor, it dawned upon him what the tumor was. The ovary on the left side was still present, and the pedicle seemed to lead to the left uterine horn. The chief part of the tumor was the skull.

Dr. Banga also reported a case of hydatid mole.

DISCUSSION.

DR. T. J. WATKINS said it was rather unique to have pregnancy so far advanced without the escape of some fluid through the abdominal ostium or a rupture. There might have been a slight rupture, possibly in the broad ligament, which would account for the absence of blood in the abdomen.

THE RELATIONS BETWEEN PERITONEAL ADHESIONS AND THE FUNCTIONATING UTERUS.

DR. CHARLES B. REED read a paper with this title. The essayist stated that numerous writers had studied the conditions which attend post-operative adhesions in the peritoneal cavity, especially with reference to the functions of the uterus. The author limited the scope of his paper to a study of the effects of those adhesions, arising from inflammatory processes within the peritoneal cavity, upon the uterus, whereby that normally mobile organ is bound by more or less firm bands to neighboring organs or to the abdominal or pelvic parietes and passes through its manifold expressions of activity and repose under the disadvantage of a variable degree of fixation. Inasmuch as ninety per cent of the female bodies, according to Winckel, that come to the post-mortem table show the effects of peritoneal inflammation in some form, it seems remarkable that cases of functional interference have not been reported more frequently. The explanation of the rarity in literature of cases complicating and interfering with the functions of the uterus lies partly in a failure to recognize the conditions *intra vitam* and partly because a large proportion of the adhesions are destroyed, or their effect neutralized by the phenomenal changes which the pregnant uterus undergoes. Furthermore, death from other and more evident causes in many cases obviates the necessity for a post-mortem. When old peritoneal adhesions are found binding the uterus to the rectum, the small intestine, the bladder, the abdominal wall, the omentum, or vermiform appendix, it is not irrational to look for local and general symptoms due to fixation of mobile organs, and traction and pressure effects between adjacent organs. It is a relatively common occurrence to find adhesions between the rectum and uterus and ovaries, which locally produce changes in the peristalsis and nutrition of the rectum, such as catarrh, diarrhea, stricture, coprostasis, and even paralysis, ileus, and death.

The author discussed at length the influence of adhesions on menstruation, sterility, tubal pregnancy, pregnancy, etc., and went into the literature of the subject exhaustively.

From his review of the literature he believes that obscure peritoneal adhesions are responsible for many cases of so-called hysteria, and frequently for menstrual pain and irregularity. The presence of adhesions undoubtedly produces many abortions and influences a certain percentage of fetal and placental anomalies. It is quite well recognized that sterility and tubal pregnancy may result from such condi-

tions, and it is also probable that pregnancy and labor are rendered pathologic by the presence of adhesions far oftener than the literature would indicate. Many adhesions are undoubtedly destroyed by the growth of the uterus in pregnancy, but the rupture of the same may be attended with fatal hemorrhage. Adhesions between the movable organs of the abdomen and the functioning uterus are only rarely a source of danger or a cause of death. Where adhesions are protecting the peritoneal cavity from pus pockets, either appendiceal or tubal, and pregnancy supervenes, a condition of extreme danger is present. The pus should be evacuated as soon as possible (in pregnancy) after the diagnosis is made, without reference to the pregnancy, and even if abortion should follow, the condition is less serious than when rupture occurs during pregnancy and labor. When the diagnosis is made during labor, it is allowable to temporize, until the termination of the case, accelerating the labor if possible by artificial assistance. When the intestines are seriously involved (occlusion), the phenomenon in a majority of cases occurs between the fourth and the seventh months of the pregnancy. When ileus occurs during pregnancy and labor, the prognosis is very grave for both mother and child, especially for the mother. The treatment of these cases should be surgical rather than obstetrical.

DISCUSSION.

DR. F. HENROTIN was called to operate on a woman, thirty-nine years of age, unmarried, with a fibroid tumor of the uterus. This large lobular tumor filled the abdominal cavity. It was about the size of an eight months' pregnancy. There was resonance everywhere, and some tympanites. The woman claimed to have menstruated, and also that she had a hemorrhage. The cervix was high up, with a swelling behind, apparently edematous, but no evidence of the presence of a fetus. He could not get the idea of pregnancy out of his mind. He explained to the woman that all the signs indicated pregnancy, but she denied the possibility of this. He made a median incision, expecting to find a large fibroid, but came down upon cellular tissue, and in the lower part of the incision he found many venous vessels, showing that he was in the vicinity of the bladder. He enlarged the incision upward, but still found only cellular tissue until he got near the umbilicus, when he found a fold. He could not make out what it was. He began to dissect up and the hemorrhage was quite profuse. He continued the dissection, and at last he had a large space, a raw adherent surface, but no peritoneal cavity. He went still farther up,

and just below the umbilicus he encountered a little fold, and found he was in the peritoneal cavity. The tumor extended up a great deal higher. The mass was fluctuating, and his suggestion of pregnancy recurred to him. He had a big raw surface, however, which did not resemble the uterus. With a coarse dull scissors he cut straight down into the mass, until he was within the uterine cavity, where he found a seven and a half months' baby, which he delivered promptly, as in a Cesarean section. He did not go into the peritoneal cavity, but contented himself with pushing up the peritoneum. He removed the placenta, and packed the uterine cavity. The uterus did not contract much. He dissected the uterus out posteriorly, and when he got through, the large vessels were exposed, but fortunately he did not dissect much lower down. Finally, he enucleated every inch of the uterus by rough dissection in cellular planes, without even cutting into the peritoneum. He clamped the vessels as best he could, and made a supravaginal amputation practically posterior to the uterus all the time. The abdomen was closed, and the woman got well without any trouble. He said it was apparently a uterus that had been retroverted, and had grown by pushing the abdominal cavity before it. In front, it was adherent to the bladder, which it dragged up with it. The pregnancy had developed at the expense of the posterior wall. The case served as an illustration of a pregnant uterus developing under the most extensive adhesions.

DR. A. GOLDSPOHN said the tubes are more tender than the uterus. Something wrong in the tubes causes pain more easily, and more pain, with an equal degree of inflammation, than in the uterine wall. The ovaries are very much more sensitive structures, largely composed of glandular parenchyma, and are more highly endowed with nerves than the uterus. How will adhesions act on those structures that are not destined to move, and are not necessarily obliged to move so much, and from their lesser size are not moved so much? Adhesions to the adnexa are very much more frequent than adhesions to the uterus. If the things which the essayist has properly set forth are evils of the uterus, then the speaker would say they are infinitely greater in their effects on the adnexa.

DR. REED, in closing the discussion, stated that adhesions are much more common in the presence of tumors than in any other pathologic condition. He felt that he was excluding the most interesting part of his subject when he left out tumors, and yet to incorporate this in his paper would have made it too lengthy.

ANTE-NATAL RIGOR MORTIS.

DR. CHARLES E. PADDOCK read a paper with the above title. He said that about thirty cases of ante-natal rigor mortis have been reported abroad, but up to this time none have been reported in this country, with the exception of those by himself. The reason why this is so certainly cannot be due to the rarity of the condition, because it must be frequent. A probable reason for the few reports is due. *First*, to the fact that the condition is not recognized because of the physician's attention to the mother, and the diagnosis already having been made of a dead child. *Second*, while the condition may have been recognized, it is a fact that few pathologic conditions are reported. *Third*, the rigor is often mistaken for something else.

The writer's experience convinces him that a dead fetus in rigor mortis delays and complicates delivery. It usually occurs following a hemorrhage, eclampsia, or some pathologic state, requiring hasty delivery. In operations, version is often difficult of accomplishment, and a normal mechanism cannot be followed.

DISCUSSION.

DR. EMIL RIES said that the most interesting question about ante-natal rigor mortis is, Why is it seen so seldom? There are many dead children born every year, and yet the condition of rigor mortis is not reported. Perhaps, those who observe it do not always take the trouble to report it. Very little is known of the rigor mortis in non-striated muscle. Thousands of uteri are removed every year, and yet he does not know of any statement showing whether the uterus goes through rigor mortis, and when, if at all.

He has had occasion to examine a number of appendices, and said it is remarkable how soon after death of the organ rigor mortis may be observed, yet he had never seen any mention made of this fact. It can be observed as early as ten minutes after removal, and will last for an hour or more.

Nothing was known about rigor mortis of the uterus. After removal of this organ, the surgeon was busy for some time in closing the wound, suturing, etc., and the care of the patient, and he did not immediately examine the uterus. That may be one of the reasons why nothing is known about rigor mortis of the uterus.

In a paper on rigor mortis by Wolff, four cases are reported, and thirty-eight collated. Of these, eight were observed in eclampsia, a

comparatively large per cent. The question arises in the mind of Wolff whether the eclampsia had anything to do with rigor mortis in the fetus; whether it would occur earlier and more extensively than in other conditions. The question of the heart beating after the death of the fetus shows a difference in the rigor mortis of voluntary muscle and involuntary muscle.

DR. HENROTIN asked Dr. Ries whether he considered the rigidity of the appendix as rigor mortis?

DR. RIES replied that when the bowel was handled peristalsis was set up, but this is not rigor, and it disappears. The contraction found after death gradually spreads all over the appendix, and remains.

DR. PADDOCK, in closing the discussion, stated, regarding the question of eclampsia and rigor mortis coming on after eclampsia, it is a well-known fact that rigor mortis occurs more suddenly and frequently after convulsions than any other cause. He does not doubt that if the mother has eclampsia it also may appear in the child, result fatally, and the child be born in rigor mortis in a very few minutes or hours.

ELECTRO-THERMIC HEMOSTASIS WITH THE DOWNES INSTRUMENT.

DR. A. GOLDSPOHN read a paper with this title.

DR. ALEXANDER HUGH FERGUSON, in the discussion which followed, said electro-thermic hemostasis, as described by Dr. Downes, is more aseptic than any other procedure. It was also antiseptic, inasmuch as the boiling heat of of 212° F. will kill germs, although spores may survive. There is no doubt but what hemostasis is complete. It is also claimed by Dr. Downes that no adhesions are formed afterwards. This is very important. There are no histologic elements to be found in the tissue that is clamped and burned, which is an evidence that complete destruction of tissue has taken place. He has used this clamp in nine cases. The first was a case of cholecystotomy and appendectomy. Dr. Downes assisted him in this operation. The instrument was applied to the appendix and meso-appendix, and it cooked a ribbon of tissue in a few seconds. The hemostasis was complete. The patient made a rapid recovery. The speaker detailed the other eight cases in which he had used the Downes clamp.

DR. T. J. WATKINS said he would like to see this method called Skene's method, as Dr. Skene was the first to use it, and devised an instrument. So far as he could see, the instrument of Dr. Downes was

no improvement on Skene's. The greatest criticism of the method is that it is used so little. He does not believe, however, that it is a good method for the removal of tubes. Usually the interstitial portion of the tube is diseased, and must be dissected out. This cannot be done with the clamp.

DR. EMIL RIES asked whether any animal experiments have been made as to the remote results after application of the clamp.

DR. GOLDSPOHN, in closing the discussion, said he thought the instrument of Dr. Downes was a time-saver. In appendix operations he can cut the appendix and meso-appendix in one grasp. Every other operation requires a preliminary tying of the mesentery, and a purse-string suture of the stump.

In reference to the remarks of Dr. Watkins, he said that Dr. Downes gives Dr. Skene due credit. He (Downes) does not overstate the improvements he has made, which are sufficient to entitle the clamp to be called the Downes instrument.

As to animal experiments, he knew of none aside from those performed by Dr. Keefe. He thinks experiments demonstrating the sterility of this piece of burnt tissue ought to be made.

RUDOLPH W. HOLMES, *Editor.*

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

STATED MEETING, APRIL 14, 1903.

The President, DR. E. H. GRANDIN, in the Chair.

RESULTS OF CURETTAGE FOR FIBROIDS.

DR. GEORGE H. MALLETT presented a uterus containing a submucous fibroid, which he had removed from an elderly woman because of profuse hemorrhages. The relations of the tumor were such as to prevent a complete curettage, but the temporary relief afforded by such an operation one year ago would suggest that the benefits were more the result of uterine irritation than from the actual removal of the uterine mucosa.

DR. HIRAM VINEBERG recalled two experiences in which curettage had seemed to interfere with the blood supply to the growth and necrosis and sepsis had resulted.

DR. CHARLES JEWETT related the history of a similar but larger

growth, for which a hysterectomy on account of the condition of the appendages, supplementary to myomectomy, proved to be indicated by the presence of other growths that had not been previously appreciated.

DIFFERENTIAL DIAGNOSIS OF ABDOMINAL TUMORS.

Specimens were presented and cases related, illustrating the difficulties of diagnosis.

DR. JOSEPH BRETTAUER presented a multilocular cyst a part of the lower wall of which consisted of a fibroid that had developed from the fundus of the uterus. A gradual increase in the size of the abdomen for three years followed by a more marked increase during the three months prior to operation suggested the diagnosis of ovarian cyst, probably malignant, because of its recently rapid growth.

DR. HERMAN J. BOLDT thinks it is often impossible to differentiate between a fibroid-cyst and an ovarian cystoma. He had recently been considerably surprised to find that a tumor which he had diagnosticated as a sarcoma of the ovary, was a sarcomatous liver that almost completely filled the abdomen. There was, however, a sarcoma of the ovary, which had been covered by the liver.

DR. CLEMENT CLEVELAND narrated the history of a case, in which several diagnosticians had mistaken impacted feces for a fibroid, the correct appreciation of which was only obtained when the patient was under the anesthetic preparatory to the contemplated operation.

DR. JOSEPH BRETTAUER also presented three large tumors that appeared to be soft fibroids. From their size and relation to the uterus, a diagnosis of intraligamentous tumor of the left side and a dermoid cyst of the right side had been made. The two tumors of the left side proved to be situated between the layers of the broad ligaments and had no uterine attachments except through the capsule. The other tumor proved to be a soft fibroid, attached by a small pedicle to the right horn.

DR. HIRAM VINEBERG described a case in which a large retroperitoneal fibroid had such close relations with the uterine artery that it was injured during the operation.

DR. GRANDIN, the President, said that such aberrant fibroids may exist and derive their nourishment from vessels of omentum or broad ligament. He had previously presented to this society photographs of a large fibro-cyst that had been nourished by omental vessels.

THE BOSSI DILATOR.

DR. ULYSSES KAHN (guest) presented an original pattern of the Bossi dilator, described its mechanism and related his own successful experiences with its use.

DR. HENRY C. COE also presented a modified form of the instrument.

DR. CHARLES JEWETT said that this instrument did not appeal to him because (1) the hand cannot be passed along the blade to watch dilatation; (2) the degree of force cannot be gauged. Of metal dilators he preferred the Gau, modified by omitting the ratchet clasp, in which the extent of force is measured by the muscular sense.

DR. J. CLIFTON EDGAR expressed himself as unfavorable to the use of either of these instruments, because from their sharp points uterine perforation may occur, and also because of the inability to pass in the hand and watch the amount of tension. He feared that the reports from abroad which were so favorable might lead to its general use with disastrous results.

DR. R. A. MURRAY had never used this instrument, but he thought it would be dangerous, and would prefer to rely upon his fingers for securing rapid dilatation.

DR. W. S. STONE thought that the favorable reports from those who had used this instrument should warrant its trial, as he had been rather unsuccessful in performing rapid dilatation with the fingers.

DR. G. T. HARRISON had had no experience with the instrument, but thought it must be dangerous.

DR. H. C. COE said that he would not attempt to obtain complete dilatation with this instrument, only enough to admit two fingers. Dr. Kahn had laid stress upon the fact that the pressure is applied gradually for twenty to thirty minutes.

DR. E. H. GRANDIN, the President, would not accept such instruments, as the hand can accomplish dilatation better than instruments in these cases in which urgent indications are present. To the dangers already pointed out he would add the possibility of rupturing the membranes, and thus preventing a subsequent version.

MICHEL'S WOUND CLAMPS.

DR. JOSEPH BRETTAUER presented a set of clamps devised by Michel for uniting wounds. He had satisfactorily used them in a number of cases. Stitch abscesses would be obviated by their use, and they produce better coaptation than plaster.

A NEW SUGGESTION FOR THE RELIEF AND CURE OF CYSTOCELE.

DR. J. RIDDLE GOFFE read this paper. He said that the early procedures for the relief of cystocele consisted simply in building up a strong perineal body that should retain the prolapsed tissue within the vulva. All the operations devised utterly failed in grasping the true cause of the difficulty and attacking it on rational principles. The fascia was the sustaining tissue and if there was a pocket or a hernia produced in it by overdistension until it had lost its power of recovery the only permanent relief consisted in cutting out the overdistension and atrophied area of the fascia and bringing into apposition the strong, well-nourished areas that had resisted or that had not been subjected to the destructive pressure. Or, as in the Bassini operation, the two layers of the distended fascia by being lapped upon each other and firmly stitched may serve to do the duty of an ordinary single layer of healthy tissue. But even when this had been done in the treatment of a cystocele and the hernia cured, there still remained the unfortunate condition that the base of the bladder was thrown into wrinkles and folds, producing pockets in which urine accumulated, underwent decomposition, and brought on an unfortunate train of symptoms. Some way then must be devised for smoothing out the base of the bladder and doing away with the redundant tissue of the bladder wall produced by diminishing the size of the fascia. This redundant tissue was not from side to side but also antero-posteriorly. There was no way of spreading out this tissue anteriorly, but the face of the uterus and broad ligaments afforded ample space and strong support over which the excess of bladder wall could be spread, stitching up the middle point well on the face of the uterus and carrying the corners of the bladder well out to the right and left on the face of the broad ligaments. The anterior vaginal incision offered every opportunity for accomplishing all these procedures. In order to understand the thoroughness of this work he said that it was necessary to keep in mind the method of making this incision, which extended not only through the vaginal mucous membrane but also through the sheath of the vagina, which was the supporting fascia in this region; the bladder was dissected from the interior of this fascia to the extent of an inch and one-half or more on either side of the median line. The principle of this operation was *support from above*. The bladder was carried up and suspended from the uterus and broad ligaments. In order to apply this principle in detail in all cases of cystocele he said that it was necessary to classify them in accordance with the etiology. In virgins

and nulliparous women, as a rule, the uterus, *i.e.*, its fundus, remained in place. There was a hypertrophy of the supravaginal portion of the cervix which must be cut away, and the attachment of the upper end of the vagina, as well as the utero-vesical attachments, shifted up to a higher level. But the uterus and broad ligaments could be made to afford the supporting power and the procedure then would consist in dissecting the vagina from the uterus throughout the entire circumference, incising the vagina along the anterior surface in order to afford room and facility for the work, amputating the cervix at a point indicated to remove the hypertrophied tissue; then the bladder was rotated upon its transverse diameter, the base being stitched up on the anterior face of the uterus and broad ligaments at a point sufficiently high to take up all the slack. As a rule, it was best to go through the vasico-uterine fold of the peritoneum into the peritoneal cavity. The object was to carry up the prolapsed bladder to its normal level. If there had been no hernia through the vaginal sheath there would be no necessity for removing any of the fascia, and the operation was completed by simply stitching the end of the vagina to the uterine tissue and sewing up the longitudinal incision. The most common forms of cystocele, however, were found in multiparas and, in such cases, the disease was associated almost uniformly with descensus and retrodisplacement of the uterus. In such cases it was necessary, before attacking the cystocele, to restore the uterus to its normal position; it should have sufficient support not only to maintain that position for itself, but also to support the bladder in its new position; he said it must be borne in mind that the higher attachment of the bladder operated reciprocally in both lifting the bladder to a higher level and maintaining the uterus in a normal anteverted position. After the bladder had been slid out on the anterior face of the broad ligament and fastened there, all the over-stretched sheath of the vagina must be cut away on the longitudinal incision and the new edges of the fascia and mucous membrane stitched with interrupted sutures. This procedure was applicable to all cases of this class in which the condition was not so extreme as to rob the connective tissue of its recuperative power. By restoring the normal circulation and the normal nutrition of the parts, the sustaining power of the connective tissue was recuperated and a normal condition established. In cases of complete procidentia the connective tissue, and by this he meant the ligaments and muscular structures contained therein, had lost all recuperative power and could no longer be relied upon to sustain the uterus in its normal position. Under such conditions hysterectomy offered the only

means of cure. His method of sustaining the vagina after hysterectomy consisted in incising the vagina from above downwards on either side, and into the V-shaped opening thus produced he dragged down to an extreme degree and stitched securely the broad ligaments. As the traction was removed and the ligaments retracted, the vagina was drawn up into the pelvis. The longitudinal incision was then made along the anterior wall of the vagina and the overstretched fascia removed as already described. To relieve the rectocele a perineorrhaphy must also be done. In elderly women even such radical procedures were not sufficient and an absolute cure could only be accomplished by the operation devised and suggested by Dr. Edebohls, and called by him "pan hysterocolpectomy." This consisted in the removal of the uterus and appendages together with the entire vagina. The denuded surfaces of the vagina and rectum were then stitched solidly together throughout the whole extent of the denudation, thus obliterating entirely the vaginal canal.

DISCUSSION.

DRS. CLEMENT CLEVELAND, WARD and MALLET, who had examined two of Dr. Goffe's patients, reported upon the excellent results that had so far been obtained in these cases.

DR. CLEVELAND stated that absolute cure does not result in many cases because the mucosa is simply doubled up; the walls should be excised and the fascia united.

DR. G. G. WARD thought, that although the technique of separating the bladder from the vagina is easy, the spreading and attaching it laterally to the broad ligaments might be difficult.

DR. G. H. MALLET also expressed the opinion that the attachment of the bladder to the broad ligament seemed to be rather formidable, but that the separating of the bladder had occurred to him as finding further application in the cure of vesico-vaginal fistulæ.

DR. H. N. VINEBERG did not consider this a new operation but rather one similar to that of Mackenrodt, who through a longitudinal incision stripped off the bladder and sewed to fundus, or, as in some cases to the posterior wall. He had himself done similar work for ten years with very gratifying results.

DR. H. C. COE stated that he had always been convinced of the little value of the ordinary operations for cystocele. He thought Dr. Goffe's operation would require special skill in vaginal work to execute. He does not understand how the torn fascia is united after pushing

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up the bladder. He spoke of an operation proposed by an Italian surgeon, in which the bladder is dissected off from above and sutured to the uterus two or three c.m. above its former point of attachment. This operation is supplemented by a ventral suspension.

DR. JOSEPH BRETTAUER expressed the hope that this operation would prove of value, but the anterior fascia in a long standing cystocele is so thin that it would appear to be difficult to isolate and unite it. The new feature of the operation—stitching the bladder to the broad ligament—he would be afraid to do during the childbearing period. His own results had been best with that operation in which the uterus was brought into the vaginal wall and used as a truss for the bladder.

DR. RALPH WALDO thought the essential feature in the operation that was responsible for the results was the dissection of the bladder from the vaginal sheath by which solid tissue could be brought into apposition.

DR. R. H. WYLIE said that inasmuch as some of these cases were really hernias, the time since Dr. Goffe's operations were performed has not been sufficiently long to test the value of the operation. He would be afraid if the bladder was so stitched that it would not contract completely; pockets holding residual urine would form.

DR. STUDDIFORD considers that Dr. Goffe belittles that part of the operation which restores the pelvic floor because in his opinion a cystocele will recur unless this is done.

DR. GOFFE, in closing the discussion, stated that he was unaware of any procedure similar to his, which had been described by Dr. Vineberg. He did not consider that dragging down the uterus and suturing it to the vaginal wall underneath the bladder was the same. The two essential principles of his operation were: 1, treating cystocele as a hernia but cutting out the sac and bringing fascial edges together; 2, smoothing out the base of the bladder and stitching it to the anterior surface of the broad ligament, thus preventing folds and pockets in that part of the bladder where such conditions may do harm.

WILLIAM S. STONE, *Editor.*

INDEX OF CURRENT LITERATURE.

J. WESLEY BOVÉE, M.D.

CHARLES S. WHITE, M.D.

GEORGE K. BAIER, M.D.

Key to periodicals to which reference is made by numbers.

1. Alabama Medical Journal. Birmingham.
2. Albany Medical Annals.
3. American Journal of the Medical Sciences. Philadelphia.
4. American Journal of Obstetrics. New York.
5. American Medical Compend. Toledo, O.
6. American Medicine. Philadelphia.
7. American Practitioner and News. Louisville.
8. American Surgery and Gynecology. St. Louis.
9. Annales de Chirurgie et d'Orthopédie. Paris.
10. Annales de Gynécologie et d'Obstétrique. Paris.
11. Annals of Gynecology and Pediatrics. Boston.
12. Annals of Surgery. Philadelphia.
13. Archiv für Gynäkologie. Berlin.
14. Archiv für Klinische Chirurgie. Berlin.
15. Archives de Neurologie. Paris.
16. Archives Provinciales de Chirurgie. Paris.
17. Archivio di Ostetricia e Ginecologia. Napoli.
18. Archivos de Ginecología, Ostetricia y Pediatría. Barcelona.
19. Atlanta Journal-Record of Medicine.
20. Australasian Medical Gazette. Sydney.
21. Beiträge Zur Geburtshilfe und Gynäkologie. Leipzig.
22. Beiträge Zur Klinischen Chirurgie. Tübingen.
23. Berliner Klinische Wochenschrift.
24. Boston Medical and Surgical Journal.
25. Botkin's Gazette. St. Petersburg.
26. Brazil Medico. Rio De Janeiro.
27. Bristol Medico-Chirurgical Journal.
28. British Gynecological Journal. London.
29. British Medical Journal. London.
30. Brooklyn Medical Journal.
31. Buffalo Medical Journal.
32. Bulletin de L'Académie de Médecine. Paris.
33. Bulletin of the American Academy of Medicine. Easton, Pa.
34. Bulletin of the Johns Hopkins Hospital. Baltimore.
35. Bulletin Société Belge de Gynécologie et d'Obstétrique. Bruxelles.
36. Bulletin Société de Chirurgie de Lyon.
37. Bulletin Société de Obstétrique. Paris.
38. Bulletins et Memoirs de la Société de Chirurgie. Paris.
39. Bulletins et Memoirs de la Société Obstétrique et Gynécologique de Paris.
40. Canada Lancet. Toronto.

41. Canada Medical Record. Montreal.
42. Canadian Journal of Medicine and Surgery. Toronto.
43. Canadian Practitioner and Review. Toronto.
44. Carolina Medical Journal. Charlotte, N. C.
45. Centralblatt für Chirurgie. Leipzig.
46. Centralblatt für Innere Medicin. Leipzig.
47. Centralblatt für Gynækologie. Leipzig.
48. Charlotte Medical Journal.
49. Chicago Medical Recorder.
50. Cincinnati Lancet-Clinic.
51. Cleveland Medical Journal.
52. La Clinica Chirurgica. Milano.
53. La Clinica Ostetrica. Roma.
54. Clinical Journal. London.
55. Clinical Review. Chicago.
56. Colorado Medical Journal. Denver.
57. Columbus Medical Journal.
58. Comptes Rendus de la Société d'Obstétrique, de Gynécologie et de Pædiatrie de Paris.
- 59a. Correspondenz-Blatt für Schweizer Ärzte. Basle.
- 59b. Deutsches Archiv. f. klin. Medicin. Leipzig.
60. Denver Medical Times.
61. Deutsche Medicinische Wochenschrift. Leipzig.
62. Deutsche Zeitschrift für Chirurgie. Leipzig.
63. Dominion Medical Monthly. Toronto.
64. Dublin Journal of the Medical Sciences.
65. Edinburgh Medical Journal.
66. L'Egypte Medicale. Alexandria.
67. Fort Wayne Medical Journal-Magazine.
68. Der Frauenarzt. Leipzig.
69. Gazette de Gynecologie. Paris.
70. Gazette Hebdomadaire des Sciences Médicales de Bordeaux.
71. Gazette des Hôpitaux de Paris.
72. Gazette Degli Ospedali e delle Cliniche. Milano.
73. Georgia Journal of Medicine and Surgery. Savannah.
74. Giornale Internazionale delle Scienze Mediche. Napoli.
75. Glasgow Medical Journal.
76. La Gynécologie. Paris.
77. Hospitalstidende. Copenhagen. Kobenhavn.
78. Hot Springs Medical Journal.
79. Illinois Medical Journal. Springfield.
80. Indian Lancet. Calcutta.
81. Indian Medical Gazette. Calcutta.
82. Indiana Medical Journal. Indianapolis.
83. Intercolonial Medical Journal of Australasia. Melbourne.
84. International Journal of Surgery. New York.
85. International Medical Magazine. New York.
86. Interstate Medical Journal. St. Louis.
87. Iowa Medical Journal. Des Moines.

88. Journal d'Accouchements. Liege.
89. Journal of the American Medical Association. Chicago.
90. Journal de Medicine de Paris.
91. Journal of Nervous and Mental Diseases. New York.
92. Journal of Obstetrics and Gynecology of the British Empire. London.
93. Journal des Sages-Femmes. Bordeaux.
94. Kansas City Medical Index-Lancet.
95. Klinisch-Therapeutische Wochenschrift. Wien.
96. The Lancet. London.
97. Louisville Monthly Journal of Medicine and Surgery.
98. Lyon Medical.
99. Maryland Medical Journal. Baltimore.
100. Medical Age. Detroit.
101. Medical Bulletin. Philadelphia.
102. Medical Chronicle. Manchester.
103. Medical Examiner and Practitioner. New York.
104. Medical Fortnightly. St. Louis.
105. Medical Mirror. St. Louis.
106. Medical News. New York.
107. Medical Press and Circular. London.
108. Medical Record. New York.
109. Medical Review of Reviews. New York.
110. Medical Standard. Chicago.
111. Medical Summary. Philadelphia.
112. Medical Times. New York.
113. Medicine. Detroit.
114. Memphis Medical Monthly.
115. Milwaukee Medical Journal.
116. Mittheilungen aus den Grenzgebieten der Medicin und Chirurgie. Jena.
117. Monatsschrift für Geburtshülfe und Gynäkologie. Berlin.
118. Montreal Medical Journal.
119. Muenchener Medicinische Wochenschrift. Muenchen.
120. New Orleans Medical and Surgical Journal.
121. New York Medical Journal.
122. New York State Journal of Medicine. New York.
123. Northwestern Lancet. Minneapolis.
124. l'Obstetrique. Paris.
125. Occidental Medical Times. San Francisco.
126. Old Dominion Journal. Richmond.
127. Pacific Medical Journal. San Francisco.
128. Pennsylvania Medical Journal. Pittsburg.
129. Philadelphia Medical Journal.
130. Physician and Surgeon. Detroit and Ann Arbor.
131. Post-Graduate. New York.
132. Practitioner. London.
133. Prager Medicinische Wochenschrift.
134. Presse Medicale. Paris.
135. Proceedings of the New York Pathological Society. New York.
136. Proceedings of the Pathological Society of Philadelphia.

137. *Le Progres Medical.* Paris.
138. *Quarterly Medical Journal of Yorkshire and Adjoining Counties.*
139. *La Rassegna d'Ostetricia e Ginecologia.* Napoli.
140. *Revista de Medicina y Cirugia.* Barcelona.
141. *Revista Ibero-Americano de Ciencias Médicas.* Madrid.
142. *Revue de Chirurgie.* Paris.
143. *Revue Clinique d'Andrologie et de Gynecologie.* Paris.
144. *Revue de Gynecologie et de Chirurgie Abdominale.* Paris.
145. *Revue de Medecine.* Paris.
146. *Revue Mensuelle Gynecologie, Obstetrique et de Pædiatrie de Bordeaux.*
147. *Revue Pratique d'Obstetrique et de Gynecologie.* Paris.
148. *Revue Pratique Obstetrique et de Pædiatrie.* Paris.
149. *Riforma Medica.* Roma.
150. *Roussky Vrach.* Odessa.
151. *St. Louis Courier of Medicine.*
152. *St. Louis Medical Review.*
153. *St. Louis Medical and Surgical Journal.*
154. *St. Paul Medical Journal.*
155. *Scottish Medical and Surgical Journal.* Edinburgh.
156. *Semaine Gynecologie.* Paris.
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158. *El Siglo Médico.* Madrid.
159. *Southern Practitioner.* Nashville.
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161. *Therapeutic Gazette.* Detroit.
162. *Therapeutische Monatshefte.* Berlin.
163. *Therapie der Gegenwart.* Berlin.
164. *Toledo Medical and Surgical Reporter.*
165. *Transactions of the Obstetrical Society of London.* London.
166. *University of Pennsylvania Medical Bulletin.* Philadelphia.
167. *Vermont Medical Monthly.* Burlington.
168. *Virchow's Archiv.* Berlin.
169. *Virginia Medical Semi-Monthly.* Richmond.
170. *Vratchebnaya Gazeta.* St. Petersburg.
171. *Washington Medical Annals.*
172. *Western Medical Review.* Lincoln, Neb.
173. *Western Medical and Surgical Gazette.* Denver.
174. *Wiener Klinische Rundschau.* Wien.
175. *Wiener Klinische Wochenschrift.* Wien.
176. *Woman's Medical Journal.* Toledo.
177. *Zeitschrift für Geburtshilfe und Gynækologie.* Stuttgart.
178. *Zeitschrift für Heilkunde.* Wien.
179. *Zeitschrift für Klinische Medicin.* Berlin.

Reference numbers refer to preceding Key to Periodicals.

Abbe, R.—Appendicitis. 103. Apr.

Abernathy, J. C.—Puerperal Sepsis, with Report of Cases. 1. Apr.

- Acquaviva et de Brignoles.—Traitement chirurgical des salpingitis. Etude historique et clinique.
- Adams, J. J.—Management of Normal Cases of Labor. 7. Feb. 1.
- Albers, J. G.—The Country Doctor—My first case of Labor in the Country. 50. May 9.
- Albert.—Die Kolpeuryse bei Incarceratio uteri gravide retroplexi. 119. Bd. L. No. 12.
- Allen, L. W.—Pancreatic Calculus. 129. Apr.
- Anderson, W.—Appendicitis. 127. Apr.
- Aspell, J.—Constipation as an Etiological Factor in Eclampsia. 4. Apr.
- Baldy, J. M.—Address in Obstetrics, Medical Society of the State of Pennsylvania. 128. Mar.
- Balloch, E. A.—Case of Cancer of the Cecum. 171. Mar.
- Bandler, S. W.—What is Eclampsia? 4. Apr.
- Bantock, G. G.—A case of Fibroid Polypus with Inversion of the Uterus; Reduction of the Uterus and Removal of the Tumour. 92. Apr.
- Bar.—Rapport sur l'unification de la nomenclature obstétrical. 124. Mar.
- Bar.—Prophylaxie et traitement de l'ophthalmie purulente des nouveau-nés. 147. Mar.
- Barling, G.—Case of Chronic Pancreatitis, with an account of the Post-mortem Examination. 29. Apr. 25.
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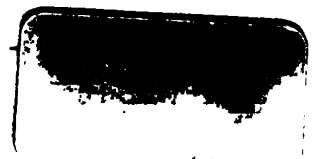
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